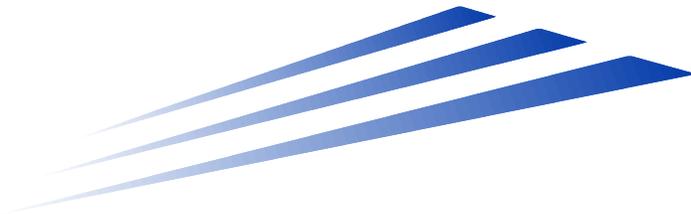


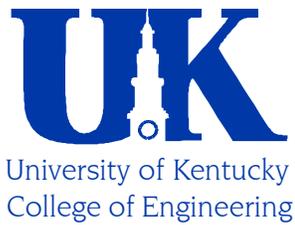
# KENTUCKY TRANSPORTATION CENTER

*College of Engineering*

**EVALUATION OF HIGH  
TRAFFIC CRASH CORRIDORS**



UNIVERSITY OF KENTUCKY



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**EVALUATION OF HIGH  
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and

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U.S. Department of Transportation

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## EXECUTIVE SUMMARY

The objectives of this study were to: a) determine a procedure to use to identify corridors in each highway district for which a detailed analysis of crash data should be conducted (with resulting increased law enforcement activities, education programs and engineering improvements); b) develop a procedure to use to analyze the crash data and recommend countermeasures; and c) conduct a case study analysis for one selected corridor.

A method which could be used to select high crash corridors, by highway district, was developed. The procedure involved: obtaining a list of routes in each district which traveled through more than one county; determining various attributes for each route (such as length, number of crashes, traffic volume); calculating a relative value for each attribute; and developing a ranking method to select a route for each district.

After a specific corridor is selected in a highway district, the crashes should be analyzed based on both a corridor basis and a review of high crash locations. The corridor analysis involves comparing the characteristics of the crashes on the corridor with statewide data. The high crash analysis involves identifying 0.1 and 0.3-mile spots and 1-mile sections having a critical number and rate of crashes and inspecting these locations. Countermeasures would then be recommended to address the problem areas identified on the corridor.

## **1.0 INTRODUCTION**

In an attempt to reduce the number of crashes and the resulting injuries and fatalities on Kentucky highways, highway corridors have been identified for increased law enforcement activities, education programs, and engineering improvements. Corridors have been identified in each of the 12 highway districts within the Kentucky Transportation Cabinet. The selection of the corridors in the past has been based solely on the number of traffic crashes.

The corridors consist of routes extending through several counties with varying cross sections, traffic volumes, and access control. It has been recognized that a more detailed method of selecting the corridors should be developed using criteria in addition to numbers of crashes. Also, a procedure for conducting an analysis of the crashes and characteristics of these corridors should be formulated. The procedure would result in determining the types of improvements and countermeasures, which could alleviate the number and severity of the crashes identified on a specific corridor.

The objectives of this study were to: a) determine a procedure to use to identify corridors in each highway district for which a detailed analysis of crash data should be conducted (with resulting increased law enforcement activities, education programs and engineering improvements); b) develop a procedure to use to analyze the crash data and recommend countermeasures; and c) conduct a case study analysis for one selected corridor.

## **2.0 PROCEDURE**

### **2.1 Selection of High Crash Corridors**

The first phase of the study was to select the initial list of corridors to be analyzed. Lists of routes were selected from each of the 12 highway districts. The routes, or corridors, included in the initial list were chosen based on a subjective selection process including all major roadways in Kentucky. The length of the route within each district was the primary basis of the initial selection. Interstates and parkways were not included in the selection process because of the existing roadway geometrics, traffic control, and access control on these routes.

Data were obtained for each of the corridors chosen to consider in order to summarize the corridor's roadway characteristics and crash and traffic information. Following is a list of the data obtained for each corridor in the initial list.

- a) Total counties route travels through in district
- b) Miles by functional classification
- c) Miles by number of lanes
- d) Total number of crashes
- e) Number of fatalities
- f) Number of injuries
- g) Number of injury/fatal crashes

- h) Percentage of injury/fatal crashes
- i) Crash rate (crashes per 100 million vehicle miles)
- j) Average daily traffic
- k) Annual miles traveled

Following is a summary of the criteria considered when selecting the high crash corridors to analyze from the initial list. One corridor was selected in each of the 12 highway districts. To be considered, each corridor must:

- a) travel through more than one county in the district,
- b) be of sufficient length to be considered a corridor,
- c) have a relatively high traffic volume,
- d) not be a full control of access highway,
- e) have a relatively high number of crashes (total and injury/fatal),
- f) have a high crash rate (total and injury/fatal), and
- g) be above a collector functional classification.

A ranking procedure was developed to identify the twelve high crash corridors. The ranking procedure used the following attributes for each corridor.

- a) Number of counties route travels through in district
- b) Length of route in district
- c) Number of arterial miles
- d) Number of crashes
- e) Percentage of fatal/injury crashes
- f) Crash rate
- g) Weighted traffic volume

For each corridor, a proportion was computed for each of these seven attributes based on the data for the given corridor compared to the maximum for any corridor in a district. The proportion was calculated for each attribute by dividing by the maximum value in each district. For example, in District 1, US 45 travels through four counties. This compares to a maximum of five counties for any corridor in that district. Therefore, the proportion for US 45 would be 0.8 for the "number of counties" factor. These proportions were used to determine the weight each factor was given for a given corridor.

The relative importance assigned to each of the seven factors would be subjective. Several ranking procedures were used with each ranking method emphasizing different characteristics. Each method divided 10 total points among the seven factors with more points given to the factor with more importance. Each of the attribute proportions was multiplied by a ranking factor. The resulting seven values were then totaled to give the overall score for each corridor. The corridor with the highest score would be considered a candidate for the high crash corridor for the district. Several ranking methods were used to determine which corridor was selected

by the greatest number of methods and the corridor which had the highest score when all the ranking methods were considered.

## **2.2 Road Safety Review**

Field data information was obtained for the corridor selected for the case study. This involved driving the route and recording information about intersections and driveways. The corridor was videotaped so that locations, which were found to have a high number and rate of crashes, could be reviewed. Other information about the corridor was obtained from the Highway Information System (HIS) file. Specific information obtained for intersections included; number of approaches, number of lanes, right-of-way control, traffic control devices, roadway geometrics and sight distance.

## **2.3 Analysis of Crashes in Corridor**

This phase of the study involved developing a method to use to obtain the data from a selected corridor that could be used to recommend countermeasures to reduce crashes on that route. One of the routes selected in the first phase of the study was used as a case study. A route was selected which contained both rural and urban areas so it would be representative of the state.

Two different types of analysis were conducted. One analysis compared the characteristics of crashes on the corridor (type, time, severity, etc.) with statewide characteristics. This was done for all crashes and “injury or fatal” crashes. The second analysis involved determining 0.1-mile spots, 0.3-mile spots, and 1.0-mile sections having the highest number and rate of crashes. After the initial list of high crash locations was determined, the crash rate for each location was compared to the critical rate (calculated for that location) to determine a critical rate factor (CRF). The spots and sections with a CRF of 1.0 or more were inspected.

## **3.0 RESULTS**

### **3.1 High Crash Corridors**

The first step in the process was the selection of routes in each of the 12 highway districts to be considered as high crash corridors. The initial selection, based primarily on length of route, resulted in the selection of 113 routes. The number of routes ranged from 6 in District 10 to 13 in District 6. Following are lists of the routes that were considered, by district.

<u>District 1</u>	<u>District 2</u>	<u>District 3</u>	<u>District 4</u>	<u>District 5</u>	<u>District 6</u>
US 45	US 41	US 31E	US 31E	US 31E	US 25
US 51	US 41A	US 68	US 31W	US 31W	US 27
US 60	US 60	US/KY 79	US 60	US 42	US 42
US 68	US 231	US 231	US 62	US 60	US 62
US 641	US 431	KY 70	US 150	US 421	US 127
KY 80	KY 54	KY 90	KY 55	KY 22	KY 8
KY 94	KY 56	KY 100	KY 61	KY 44	KY 9
KY 121	KY 70	KY 101	KY 84	KY 55	KY 10
KY 307	KY 91		KY 88	KY 61	KY 16
	KY 109		KY 259		KY 17
					KY 22
					KY 36
					KY 177

<u>District 7</u>	<u>District 8</u>	<u>District 9</u>	<u>District 10</u>	<u>District 11</u>	<u>District 12</u>
US 25	US 27	US 23	US 460	US 25E	US 23
US 27	US 127	US 60	KY 7	US 119	US 119
US 60	KY 55	KY 1	KY 11	US 421	KY 3
US 68	KY 61	KY 7	KY 15	KY 11	KY 7
US 127	KY 70	KY 8	KY 30	KY 30	KY 80
US 460	KY 78	KY 9	KY 52	KY 66	KY 122
KY 4	KY 80	KY 10		KY 80	KY 194
KY 33	KY 90	KY 11		KY 92	KY 201
KY 34	KY 461	KY 32		KY 221	
KY 169		KY 36			
KY 627		KY 57			

Data were then obtained for each of these routes to use in the selection process. A summary of the data, by district, is given in Appendix A. An example of the data for District 4 is given in Table 1. The crash data are for the three-year period of 1998 through 2000.

As described in the procedure, several ranking methods were used to assign the relative importance of the seven attributes for each corridor (number of counties, total length, miles of arterial classification, total number of crashes, percentage of fatal/injury crashes, crash rate, and traffic volume). A description of the nine ranking methods used to assign points to each of the attributes is given in Table 2. The research team subjectively assigned the points for all but one of the methods. The points assigned by ranking method number seven were obtained using a comparison process conducted during an advisory committee meeting.

For each method, the total points assigned to the seven attributes is 10. Each attribute was divided by the maximum value in each district, multiplied by the ranking

factor, and added to give the ranking score for each route. The routes with the highest scores for each method were considered for the corridor in a district. The routes, by highway district, obtaining the top three rankings for each of the nine ranking methods are given in Appendix B. The total score from all nine methods was determined and used to list the three routes with highest total scores. The total score was obtained by adding the scores for each of the nine ranking methods. Following is a list of the routes with the highest score for each district.

<u>District Number</u>	<u>Route</u>	<u>District Number</u>	<u>Route</u>	<u>District Number</u>	<u>Route</u>
1	US 60	5	US 60	9	US 60
2	US 41A	6	US 25	10	KY 15
3	US 68	7	US 27	11	US 421
4	US 31W	8	US 27	12	US 23

Nine of the 12 routes were the same that had been previously identified and used in the Transportation Cabinet’s Drive Smart program. The exceptions were US 41A in District 2 and US 31W in Districts 3 and 5, which have been used in the Drive Smart program. The route with the highest total score was KY 15 in District 10. In Districts 1, 10, and 11, the same route was identified as having the highest score using all nine ranking methods. Also, in Districts 4, 8, 9, and 12, the same route was identified by eight of ranking methods. Three different routes were identified in Districts 2 and 5.

Ranking method 3 identified all of the routes having the highest total score (sum of the score from the various ranking methods) in all 12 districts. Ranking methods 1, 2, 4 and 8 identified the route with the highest overall score in 11 of the districts with the lowest numbers for method 6 with six identified and method 5 and 9 with eight identified.

While the procedure used the sum of all nine methods to determine the corridor in a district, the decision could be made to exclude any method. For example, method six did not identify several of the corridors selected by the other methods so it could be excluded. The total score from any number of the nine methods could be used to select a corridor in a given district.

### **3.2 Analysis of Crashes in Corridor**

A procedure was developed to summarize and analyze crash data in a corridor. The steps in the process involved:

- a) comparing crash data in the corridor to statewide statistics,
- b) identifying high crash spots and sections,
- c) conducting site visits to the corridor and high crash locations, and
- d) developing a list of proposed countermeasures for the problem areas identified using both the corridor and high crash locations analysis.

Steps “a” through “c” of this process were applied to a corridor in one highway district to provide a case study. Developing a list of countermeasures for specific spots and sections within a corridor (step “d”) would primarily be the responsibility of the Kentucky Transportation Cabinet. The countermeasures would include engineering improvements, education programs and law enforcement activities. The selected corridor was US 31W in District 4. This corridor was selected by 8 of the 9 ranking procedures so there was a consensus that it was the appropriate route in its district. Its total length in District 4 is 65.1 miles, which is distributed between rural and urban areas with 69 percent in a rural area. There are both two lane and “over two lane” portions with 60 percent two lane. There were 2,740 crashes in the three years of 1998 through 2000 with 13 fatalities and 708 injuries. The percentage of fatal or injury crashes was 28 percent. The crash rate was 327 crashes/100 million vehicle miles (C/100MVM). The weighted daily traffic is 12,127 with 288 million annual vehicle miles.

The crash file had to be manually edited to exclude crashes in parking lots, correct out-of-range milepoints, add milepoints where blank, and omit crashes which occurred on US 31 WB (in Elizabethtown) and US 31 WX (in West Point). After editing, only about 8 percent of the crash data was not usable due to the lack of milepoint data. The reports which were unusable were either: mislabeled to the point that a specific location could not be identified; lacking a milepoint and insufficient information available to locate a milepoint; or the crash location was actually in a parking lot (2000 data only).

### 3.2.1 Crash Data for Corridor

Crash data for the three years of 1998 through 2000 on US 31W in District 4 were summarized and compared to statewide data for this period. This was done considering all crashes (Table 3) and “injury or fatal” crashes (Table 4). Fatal crashes were not used alone since there is too low a number to obtain a meaningful comparison. Following is a discussion of this comparison considering all crashes. Separate comparisons were made for the rural and urban portions of US 31W to comparable types of roadways across the state.

<u>VARIABLE</u>	<u>COMPARISON (WITH ALL CRASHES)</u>
Severity	There were no major differences although the percentage of injury crashes on the rural section of US 31W was slightly lower.
Directional Analysis	There was a substantially higher percentage of rural crashes at intersections resulting from the number of angle crashes. For non-intersection crashes, the rural section had a higher percentage of rear end and “same direction sideswipe” with a lower percentage of fixed object and “ran off roadway” crashes. The percentage on the urban section at intersections was lower due to fewer angle and rear end

Directional Analysis (continued)	collisions. For non-intersection crashes on the urban section, the largest differences were a higher percentage of rear end and driveway related crashes.
Time of Day	There were no major differences but the percent between noon and 5:59 pm was slightly higher.
Day of Week	There was no substantial difference.
Month	There was no substantial difference.
Number of Vehicles	In the rural section there was a much lower percentage of single vehicle crashes while there was a higher percentage of single vehicle crashes in the urban section.
Land Use	The percentage in business/industrial areas was much higher.
Road Surface Conditions	There were no major differences but the percent on a dry pavement was slightly higher in the rural section.
Weather	There were no major differences.
Road Character	On the rural section, the percent on a curve was substantially lower. The major difference in the urban section was a higher percentage on a straight/grade.
Type Crash/1 <sup>st</sup> Event	The percent on the rural section was much higher for a collision with another motor vehicle and lower for colliding with a fixed object. The percentage on the urban section was higher for crashes involving another vehicle and lower for crashes involving a deer.
Contributing Factors	For the rural section, there was a higher percentage involving failure to yield, disregarding traffic control, and driver inattention and a lower percentage with unsafe speed, alcohol, and slippery surface. For the urban section, there was a higher percentage involving animal action and slippery surface with a lower percentage involving failure to yield and following too close.
Light Condition	The rural section had a lower percentage during darkness with no lighting.
Vehicle Type	There was a slightly higher percentage involving a truck.

Following is a discussion of this comparison considering injury or fatal crashes.

<u>VARIABLE</u>	<u>COMPARISON (WITH ALL INJURY/FATAL CRASHES)</u>
Directional Analysis	The rural section had a higher percentage at an intersection primarily due to angle collisions. The rural section also had a higher percentage of non-intersection collisions involving a rear end with a lower percentage of “run off road” and fixed object collisions. The urban section had a lower percentage at an intersection with a higher percentage of non-intersection collisions involving a rear end crash or occurring at a driveway.
Time of Day	There was a lower percentage between midnight and 6 am and a higher percentage from noon to 6 pm.
Day of Week	No substantial difference was noted.
Month	There was a higher percentage from March through May with a lower percentage from September through November.
Number of Vehicles	The percentage of single vehicle collisions was much lower in the rural section and slightly higher in the urban section.
Land Use	The percentage in business/industrial areas was much higher.
Road Surface Conditions	The largest difference was the lower percentage on a wet surface in the rural section.
Weather	There were no major differences.
Road Character	There was a much lower percentage on a curve in the rural section. The urban section had a higher percentage on a straight/grade.
Type Crash/1 <sup>st</sup> Event	The rural sections had a much higher percentage involving another vehicle and a much lower percentage involving a fixed object. There were smaller differences on the urban section.

Contributing Factors	The rural section had higher percentages involving failure to yield, following too close, falling asleep, driver inattention, and distraction with lower percentages involving unsafe speed, alcohol, view obstructions, and slippery surface. The urban section had higher percentages involving falling asleep and slippery surface and lower percentages involving failure to yield, following too close, and disregarding traffic control.
Light Condition	There was a lower percentage in the rural section during darkness with no lighting with a lower percentage in the urban section during darkness with lighting.
Vehicle Type	There was a slightly higher percentage of trucks.

### 3.2.2 High Crash Spots and Sections

High crash spots (0.1 and 0.3 mile) and sections (1 mile) were identified using average statewide crash data. Separate data were used to identify spots and sections in rural and urban areas. The crash data along US 31W in District 4 for the three years of 1998 through 2000 were combined and placed into a file in order by milepoint from south to north along the route. The route extends through four counties (Hart, Larue, Hardin, and Meade).

The first step was to locate spots or sections that had a critical number of crashes in 1998 through 2000. Following are the critical numbers used in the analysis. A spot or section had to have at least this number of crashes to be considered for further analysis.

Type	0.1-Mile Spot	0.3-Mile Spot	1.0-Mile Section
Rural (2 lane)	3	5	10
Urban (2 lane)	7	14	36
Urban (4 lane, divided)	16	38	106
Urban (4 lane, undivided)	19	47	132

There were 126 spots and sections identified as having a critical number of crashes. There were 71 0.1-mile spots, 38 0.3-mile spots, and 17 1.0-mile sections.

Rates were calculated for each spot or section that had a critical number of crashes. The rates were in terms of crashes per million vehicles (C/MV) for spots and crashes per 100 million vehicle miles (C/100MVM) for sections. Critical rates were calculated for each spot and section based on the average rate for the type of road and the traffic volume at that location. Following are the average crash rates used in the calculations:

Type	0.1-Mile Spot (C/MV)	0.3-Mile Spot (C/MV)	1.0-Mile Section (C/100MV)
Rural (2 lane)	0.25	0.75	248
Urban (2 lane)	0.31	0.92	306
Urban (4 lane, divided)	0.31	0.94	313
Urban (4 lane, undivided)	0.50	1.50	501

The crash rate at a spot or section was then compared to the critical rate calculated for that spot or section with a critical rate factor (CRF) calculated. Lists of the spots and sections determined to have a critical number of crashes are given in Appendix C. Locations where the actual crash rate was at or above the critical rate would have a CRF of 1.0 or above. Data for these spots and sections, with a CRF of 1.0 or above, are summarized in Table 5 for 0.1-mile spots, 0.3-mile spots, and 1.0-mile sections. There were 13 0.1-mile spots identified with a CRF of 1.0 or above compared to 13 0.3-mile spots, and 6 1.0-mile sections.

The highest CRFs for each length were 2.14 (MP 19.458 to 19.558 in Hardin County) for 0.1-mile spots, 2.92 (MP 19.209 to 19.509 in Hardin County) for 0.3-mile spots, and 3.54 (MP 19.0 to 20.0 in Hardin County) for 1.0-mile sections. These 0.1- and 0.3-mile spots were contained within the 1.0-mile section. Considering the overlapping of spots and sections, 6.7 miles of US 31W were identified as having a CRF of 1.0 above. This represents about 10 percent of the total mileage in the district. All these locations were in Hardin County.

### 3.2.3 Road Safety Review

US 31W was driven and videotaped. A form almost identical to the one shown in Figure 1 was used to obtain data at each intersection with a state, city or county road. There are 197 such intersections of which 81 percent are with a city or county road. The number of residential driveways and business entrances were tabulated. There are 1,081 residential driveways and 376 business entrances. The number of driveways and business entrances were totaled by mile along the route.

The following information pertains to intersections with state routes, city streets and county roads. About sixty percent occurred in Hardin County and about one-third are in Hart County. Slightly over one-half (53 percent) are in an urban area. Seventy-three percent are T-intersections with only one side road approach. The most common right-of-way control is a stop sign on the side road (73 percent) with 14 percent having a traffic signal and 9 percent having no control. Only three percent of the intersections without a traffic signal had an intersection beacon. Slightly over one-half (57 percent) had roadway lighting. The most common signs on the US 31W approaches are guide signs (mainly directional signs) with about 18 percent having this type of sign. About 75 percent of the US 31W approaches have no advance signing. About 90 percent of the US 31W approaches are straight and about 60 percent are flat.

### 3.2.4 Site Visits at High Crash Locations

Crash data were summarized at the high crash spots and sections with site visits made to the various locations. Following is a summary of the analysis and site visit data collected at a sample of the locations. The crash data are for 1998 through 2000.

Location (Hardin County)	Data Analysis
MP 4.1 - 4.4	There were 26 crashes at this 0.3-mile rural spot with a CRF of 2.33. The ADT is 2,800. The majority of the crashes were related to the intersection with KY 84. The right-of-way at this intersection is controlled by stop signs on the KY 84 approaches, and most of the crashes involved angle crashes occurring as a driver attempted to enter or cross US 31W from KY 84.
MP 9.3 - 9.6	There were 13 crashes at this 0.3-mile rural spot with a CRF of 1.11. The ADT is 3,100. The majority of the crashes were related to the intersection with KY 222. Right-of-way is controlled by stop signs on the KY 222 approaches.
MP 14.8 - 15.1	There were 50 crashes at this 0.3-mile urban spot with a CRF of 1.75. The ADT is 10,500. The majority of the crashes were related to the intersections with KY 61/Western Kentucky Parkway and KY 210. There are traffic signals at both intersections.
MP 15.9 - 16.9	There were 146 crashes in this 1.0-mile urban section with a CRF of 2.38. The ADT is 15,900. This is a four-lane undivided section through the central business district of Elizabethtown with a curb and gutter cross section. This section includes the traffic circle at the courthouse. There are several intersections and driveways with some traffic signals. The most common crash was a non-intersection rear end. This was followed by intersection-related, same direction sideswipes, and driveway-related crashes.
MP 18.0 - 19.0	There were 140 crashes in this 1.0-mile urban section with a CRF of 2.08. The ADT is 17,700. This is a four-lane undivided section with a curb and gutter cross section. There are several intersections with some traffic signals. There are numerous business driveways. The most common crashes were rear end and intersection or driveway related with some same direction sideswipes.

- MP 19.4 - 19.5      There were 107 crashes at this 0.1-mile urban spot with a CRF of 2.14. The ADT is 40,600. This is at the intersection with KY 3005 (Ring Road), which has a traffic signal. At this location, US 31W is a four-lane road with turn lanes and full width paved shoulders. Most of the crashes were rear end.
- MP 27.6 - 27.9      There were 159 crashes in the 0.3-mile urban spot with a CRF of 2.37. The ADT is 32,400. The major intersection within this spot is with KY 1815, which has a signal. This is a four-lane section with paved shoulder and median. There are numerous business driveways in the area. The most common crashes were rear end and driveway related.

## **4.0      SUMMARY**

### **4.1      Method to Select Corridor**

A method that could be used to select high crash corridors, by highway district, was developed. The following procedure should be used:

- a) determine number of routes (excluding full control of access highways) that travel through more than one county in each highway district,
- b) obtain the following attributes for each route (number of counties route travels through in district, length, number of arterial miles, number of crashes, percentage of fatal/injury crashes, crash rate, and weighted traffic volume),
- c) for each route obtain a relative value for each attribute in each district by dividing by the maximum value in each district,
- d) multiply these proportions by a ranking factor for each attribute (Table 2) and total these values to give the ranking for each route in each district (for each ranking procedure), and
- e) sum the values for the ranking methods selected to be used in a specific district and select the route with the highest total as the corridor for that district (note that any number or all of the nine methods could be summed to give the score for the various corridors).

### **4.2      Road Safety Review**

A road safety review of the corridor should be conducted. This could vary in detail from driving the corridor and obtaining the type of information given on the Intersection Inventory data sheet (Figure 1) to using a team to conduct a detailed Roadway Safety Audit.

### **4.3 Analysis of Crashes in Corridor**

After a specific corridor is selected in a highway district, the crashes should be analyzed using both a corridor basis and a review of high crash locations. Following is a summary of the steps to use in this analysis.

#### Corridor Analysis

- a) Determine the characteristics of crashes on the selected corridor (type, contributing factors, time, etc.)
- b) Compare the crashes on the corridor with statewide characteristics
- c) Drive the corridor using information from the crash analysis as background for noting areas in need of improvement
- d) Recommend countermeasures for corridor

#### High Crash Analysis

- a) Determine 0.1 and 0.3-mile spots and 1.0-mile sections having a critical number of crashes
- b) Calculate rates for high crash spots and sections
- c) Determine a critical rate factor (CRF) for each high crash spot and section
- d) Analyze characteristics of crashes at locations with a CRF of 1.0 or above
- e) Inspect locations where a pattern is found in the crash analysis
- f) Recommend countermeasures for specific locations

**Figure 1. Field Data Collection Form**

## **INTERSECTION INVENTORY**

County: \_\_\_\_\_ Route: \_\_\_\_\_ Milepoint: \_\_\_\_\_

Type: State (Route Number) –  
County/City (street/Road Name) –  
Business Entrance (Name) –

Number of Approaches: US 31W \_\_\_\_\_ Side Road \_\_\_\_\_

Description of Number of Lanes: US 31W –  
(through and turn) Side Road –

Right of Way Control: Stop Sign –  
Traffic Signal –  
None –

Intersection Beacon: Yes –  
No –

Advanced Beacon: Yes –  
No –

Related Signs on US 31W:

Related Signs on Side Road:

Related Pavement Markings: US 31W –  
Side Road –

Roadway Lighting: Yes –  
No –

US 31W Roadway Geometrics:  
Grade –  
Curvature –

Description of Sight Distance/Visibility (note any direction line of sight under 1,000 feet for side road driver to observe traffic on US 31W and determine sight distance):

**TABLE 1. DATA USED FOR SELECTION PROCESS IN DISTRICT 4**

<b>Total Miles by Funtional Classification</b>						
<b>Route</b>	<b>Total Counties*</b>	<b>Total Miles</b>	<b>Urban Arterial</b>	<b>Urban Local/Collector</b>	<b>Rural Arterial</b>	<b>Rural Local/Collector</b>
US 31E	3	69.8	5.4	0.0	35.9	28.5
US 31W	4	65.1	20.1	0.0	6.9	38.1
KY 55	4	38.1	3.3	0.0	16.3	18.6
US 60	2	47.0	2.5	0.0	44.5	0.0
KY 61	4	45.5	1.0	0.0	42.2	2.2
US 62	3	99.1	12.8	0.0	0.6	85.8
KY 84	5	65.9	0.0	0.0	0.0	65.9
KY 88	3	56.3	0.0	0.0	0.0	56.3
US 150	2	28.6	1.9	0.0	26.6	0.0
KY 259	3	54.5	0.0	0.0	29.4	25.1

**Crash Information (per year, 1998-2000)**

<b>Route</b>	<b>Total Number of Crashes</b>	<b>Number of Fatalities</b>	<b>Number of Injuries</b>	<b>Number of Fatal/Injury Crashes</b>	<b>Fatal/Injury Crash Percentage</b>	<b>Crash Rate (C/100 MVM)</b>
US 31E	333.5	5	148	95.5	29	273
US 31W	942	4.5	419	261.5	28	327
KY 55	134	1	59.5	38	28	211
US 60	146.5	3	94.5	54.5	37	169
KY 61	128	1.5	61	40	31	160
US 62	425.5	4.5	229	137	32	241
KY 84	57.5	1.5	31	20.5	36	231
KY 88	58	1.5	31.5	24	41	194
US 150	132	0.5	60	35.5	27	221
KY 259	70	0.5	62	35.5	51	173

**Average Daily Traffic (ADT)**

**Total Miles**

<b>Route</b>	<b>Weighted</b>	<b>Maximum</b>	<b>Minimum</b>	<b>Annual VMT** (100 Million)</b>	<b>Two Lanes or Fewer</b>	<b>Over Two Lanes</b>
US 31E	4,800	22,228	1,478	1.22	68.9	0.9
US 31W	12,127	39,034	1,700	2.88	39.2	25.9
KY 55	4,576	12,179	809	0.64	37.0	1.1
US 60	5,057	10,501	1,440	0.87	45.5	1.5
KY 61	4,808	12,503	1,588	0.80	30.8	14.6
US 62	4,883	25,500	725	1.77	88.9	10.2
KY 84	1,036	4,243	145	0.25	65.9	0.0
KY 88	1,456	2,469	798	0.30	56.3	0.0
US 150	5,715	16,000	2,302	0.60	28.6	0.0
KY 259	2,035	18,500	174	0.40	53.8	0.7

\*Number of counties route travels through (counties are only considered once if route re-enters county)

\*\*Vehicle Miles Traveled

**TABLE 2. DESCRIPTION OF RANKING METHODS**

Criteria	Number of Points								
	Method Number								
	1	2	3	4	5	6	7*	8	9
Total Number of Counties	1	1	1.5	2	0	3	1	1	0.5
Total Number of Miles	1	1.5	1	1	0	4	1.4	1	1
Total Number of Arterial Miles	1	0.5	0.5	1	0	3	0.5	0.5	0.5
Total Number of Accidents	1	1.5	1.5	1.5	3	0	1.9	2	2
Fatal/Injury Accident Percentage	2	1.5	1.5	1.5	3	0	2.8	2.5	3
Accident Rate (Acc./100 MVM)	3	2.5	2	1.5	4	0	2.4	2.5	2.5
Weighted ADT	1	1.5	2	1.5	0	0	0	0.5	0.5
Highest Possible Rank Value	10	10	10	10	10	10	10	10	10

\*Developed using a comparison process conducted during an advisory committee meeting

**TABLE 3. COMPARISON OF ALL CRASHES ON US31W WITH ALL CRASHES ON BOTH TWO LANE RURAL AND FOUR LANE URBAN HIGHWAYS (1998-2000)**

VARIABLE	CATEGORY	PERCENT OF TOTAL						
		TWO LANE RURAL		FOUR LANE URBAN		ALL		
		ALL	US 31W	ALL	US 31W	ROUTES*	US 31W	
Severity	Fatal	1.03	0.89	0.22	0.40	0.63	0.65	
	Injury	33.29	26.56	25.08	26.09	29.19	26.32	
Directional Analysis	Intersection							
	Angle	8.76	18.11	23.53	15.84	16.15	16.98	
	Rear End	5.00	7.66	18.11	10.94	11.55	9.30	
	Opposing Left Turn	0.61	0.65	2.06	0.53	1.34	0.59	
	Fixed Object	1.68	0.24	1.18	0.59	1.43	0.42	
	Same Direction Sideswipe	0.42	0.67	1.84	1.39	1.13	1.03	
	Bicycle	0.09	0.22	0.27	0.09	0.18	0.15	
	Pedestrian	0.10	0.00	0.40	0.09	0.25	0.04	
	All Intersection	19.16	30.91	50.19	30.84	34.68	30.87	
		Non-Intersection						
		Rear End in Traffic Lane	11.26	22.04	22.30	30.67	16.78	26.35
		Shoulder (rear end/other)	0.63	0.87	0.14	0.16	0.38	0.51
		Head On	1.57	2.85	0.30	0.44	0.94	1.64
		Same Direction Sideswipe	1.79	5.55	4.85	6.25	3.32	5.90
		Opposite Direction Sideswipe	7.12	2.16	1.05	1.09	4.08	1.62
		Driveway Related	8.16	9.00	9.07	13.81	8.62	11.40
		Parked Vehicle	4.98	2.43	1.27	1.20	3.12	1.82
		Pedestrian	0.48	0.64	0.52	0.13	0.50	0.39
		Fixed Object	17.09	7.56	2.43	5.02	9.76	6.29
		Ran Off Roadway	14.69	3.61	0.92	2.16	7.81	2.88
		Overturned in Road	1.56	0.24	0.10	0.27	0.83	0.26
		Bicycle	0.18	0.46	0.14	0.21	0.16	0.34
		Animal	7.25	8.71	0.83	3.12	4.04	5.91
		Train	0.07	0.00	0.01	0.00	0.04	0.00
	Time of Day	Midnight - 5:59 am	9.05	7.36	4.43	3.86	6.74	5.61
		6:00 am - 11:59 am	25.22	28.09	24.44	23.19	24.83	25.64
		Noon - 5:59 pm	41.26	43.39	51.49	55.93	46.38	49.66
6:00 pm - 11:59 pm		24.46	21.16	19.64	17.01	22.05	19.09	
Day of Week	Monday - Friday	73.19	77.06	79.20	75.94	76.19	76.50	
	Saturday - Sunday	26.81	22.94	20.80	24.06	23.81	23.50	
Month	December - February	23.55	22.33	23.59	23.75	23.57	23.04	
	March - May	24.86	27.37	25.43	26.44	25.14	26.90	
	June - August	24.57	23.81	24.05	23.82	24.31	23.82	
	September - November	27.02	26.50	26.94	25.98	26.98	26.24	
Number of Vehicles	One	43.68	21.74	6.70	12.07	25.19	16.91	
	Two	53.09	72.20	84.18	78.98	68.63	75.59	
	More than two	3.23	6.07	9.13	8.94	6.18	7.50	
Land Use	Rural	67.75	39.70	4.84	12.43	36.29	26.07	
	Business/Industrial	15.98	47.13	67.49	84.47	41.73	65.80	
	Other	16.14	13.16	15.29	2.88	15.71	8.02	

TABLE 3.

**COMPARISON OF ALL CRASHES ON US31W WITH ALL CRASHES ON BOTH TWO LANE RURAL  
AND FOUR LANE URBAN HIGHWAYS (1998-2000) (continued)**

VARIABLE	CATEGORY	PERCENT OF TOTAL					
		TWO LANE RURAL		FOUR LANE URBAN		ALL	
		ALL	US 31W	ALL	US 31W	ROUTES*	US 31W
Road Surface	Dry	73.06	78.69	76.62	74.70	74.84	76.70
Conditions	Wet	21.69	17.59	21.43	21.86	21.56	19.73
	Snow/Ice/Slush	4.86	3.71	1.78	3.13	3.32	3.42
Weather	Clear	61.76	66.23	59.63	57.65	60.70	61.94
	Raining	14.12	13.13	14.63	14.53	14.37	13.83
	Snowing	2.92	3.06	1.75	2.72	2.33	2.89
	Fog/Smog/Smoke	1.42	0.43	0.27	0.39	0.84	0.41
	Sleet/Hail	0.39	0.00	0.24	0.45	0.32	0.23
	Cloudy	19.01	16.93	23.23	24.03	21.12	20.48
Road Character	Straight/Level	44.03	68.31	74.50	66.52	59.26	67.42
	Straight/Grade	15.92	17.83	16.95	25.24	16.44	21.54
	Straight/Hillcrest	5.43	1.80	2.03	1.61	3.73	1.71
	Curve/Level	15.95	6.90	3.14	4.21	9.54	5.56
	Curve/Grade	15.09	4.51	2.85	1.89	8.97	3.20
	Curve/Hillcrest	3.39	0.43	0.40	0.34	1.90	0.39
Type Accident 1st Event	Collision with Non-Fixed Object						
	Other Vehicle	54.96	77.19	92.01	87.06	73.49	82.13
	Pedestrian	0.54	0.64	0.74	0.22	0.64	0.43
	Bicycle	0.21	0.67	0.35	0.22	0.28	0.45
	Animal	2.05	1.71	0.36	0.26	1.20	0.99
	Train	0.07	0.00	0.01	0.00	0.04	0.00
	Deer	5.72	6.77	0.72	3.11	3.22	4.94
	Collision with Fixed Object						
	Utility Pole	1.91	1.16	0.95	1.19	1.43	1.17
	Guardrail	1.36	0.92	0.41	0.75	0.89	0.83
	Crash Cushion	0.02	0.00	0.01	0.09	0.01	0.04
	Sign Post	0.97	0.92	0.33	0.67	0.65	0.79
	Tree	5.21	1.07	0.26	0.22	2.73	0.65
	Building/Wall	0.39	0.21	0.10	0.13	0.25	0.17
	Curbing	0.19	0.00	0.71	0.61	0.45	0.30
	Fence	3.16	0.43	0.12	0.05	1.64	0.24
	Bridge	0.47	0.46	0.16	0.00	0.31	0.23
	Culvert/Headwall	1.32	0.43	0.09	0.35	0.71	0.39
	Median Barrier	0.04	0.64	0.25	0.87	0.14	0.75
	Snow embankment	0.05	0.00	0.01	0.00	0.03	0.00
Earth embankment/ Rock cut / Ditch	11.03	1.38	0.51	1.78	5.77	1.58	
Fire Hydrant	0.11	0.21	0.08	0.04	0.10	0.13	
Guardrail End Treatment	0.32	0.43	0.07	0.35	0.19	0.39	
Other Fixed Objects	1.87	0.67	0.33	0.18	1.10	0.43	

TABLE 3.

**COMPARISON OF ALL CRASHES ON US31W WITH ALL CRASHES ON BOTH TWO LANE RURAL  
AND FOUR LANE URBAN HIGHWAYS (1998-2000) (continued)**

VARIABLE	CATEGORY	PERCENT OF TOTAL					
		TWO LANE RURAL		FOUR LANE URBAN		ALL	
		ALL	US 31W	ALL	US 31W	ROUTES*	US 31W
Type Accident	Non-Collision						
1st Event	Overturned	2.02	0.46	0.14	0.31	1.08	0.39
(continued)	Fire/Explosion	0.27	0.21	0.00	0.04	0.14	0.13
	Submersion	0.05	0.00	0.00	0.00	0.03	0.00
	Ran off roadway	3.49	1.37	0.23	0.39	1.86	0.88
	Other	1.04	0.94	0.29	0.49	0.66	0.72
Contributing Factors (Percent of all crashes)	Human						
	Unsafe Speed	11.79	5.82	3.15	2.25	7.47	4.03
	Failure to Yield	10.50	19.25	21.90	17.66	16.20	18.46
	Following too Close	2.88	2.51	10.22	5.45	6.55	3.98
	Improper Passing	1.21	2.03	0.72	0.26	0.96	1.15
	Disregard Traffic Control	1.03	3.18	6.00	4.97	3.51	4.08
	Improper Turn	1.03	0.89	2.77	1.58	1.90	1.24
	Alcohol Involvement	6.31	2.00	2.65	1.70	4.48	1.85
	Drug	0.91	0.73	0.24	0.17	0.58	0.45
	Sick	0.26	0.43	0.21	0.09	0.24	0.26
	Fell Asleep	1.70	2.00	0.63	1.03	1.16	1.51
	Lost Consciousness	0.45	0.22	0.25	0.23	0.35	0.22
	Driver Inattention	33.95	42.98	37.40	36.69	35.67	39.83
	Distraction	2.81	2.51	2.05	2.42	2.43	2.47
	Physical Disability	0.23	0.43	0.19	0.18	0.21	0.31
	Cell Phone**	0.06	0.00	0.13	0.04	0.10	0.02
	Improper Backing**	0.27	0.00	0.16	0.04	0.21	0.02
	Misjudged Clearance**	0.68	0.65	0.77	0.69	0.73	0.67
	Not Under Proper Control**	2.24	1.52	1.41	1.18	1.82	1.35
	Over-correcting**	1.31	0.65	0.21	0.37	0.76	0.51
	Vehicular						
	Defective Brakes	1.51	1.53	1.29	0.84	1.40	1.18
	Lighting Defective	0.34	1.16	0.10	0.27	0.22	0.71
	Steering Defective	0.43	0.21	0.09	0.05	0.26	0.13
	Tire Problem	1.01	0.46	0.29	0.40	0.65	0.43
	Defective Tow Hitch	0.10	0.00	0.04	0.05	0.07	0.02
	Load Problem	0.40	0.46	0.16	0.14	0.28	0.30
	Environmental						
	Animal Action	8.47	8.52	0.68	2.23	4.57	5.38
	Glare	1.02	0.46	0.83	0.62	0.93	0.54
	View Obstruction	4.66	1.59	2.47	2.76	3.57	2.18
	Debris in Roadway	0.81	0.43	0.22	0.30	0.52	0.36
	Improper Traffic Control	0.06	0.21	0.20	0.05	0.13	0.13
	Defective Shoulder	0.49	0.22	0.01	0.05	0.25	0.13
	Hole/Bump	0.19	0.00	0.04	0.04	0.11	0.02
	Road Construction	0.33	0.43	0.39	1.13	0.36	0.78
	Improperly Parked Vehicle	0.26	0.22	0.11	0.14	0.18	0.18
	Fixed Object	0.19	0.00	0.13	0.05	0.16	0.02
	Slippery Surface	14.47	10.10	8.84	11.25	11.65	10.68
	Water Pooling	1.28	0.49	0.57	1.13	0.92	0.81

TABLE 3.

**COMPARISON OF ALL CRASHES ON US31W WITH ALL CRASHES ON BOTH TWO LANE RURAL  
AND FOUR LANE URBAN HIGHWAYS (1998-2000) (continued)**

VARIABLE	CATEGORY	PERCENT OF TOTAL					
		TWO LANE RURAL		FOUR LANE URBAN		ALL	
		ALL	US 31W	ALL	US 31W	ROUTES*	US 31W
Light Condition	Daylight	67.78	71.55	77.64	80.31	72.71	75.93
	Dawn	2.27	1.35	1.42	1.12	1.84	1.24
	Dusk	2.78	1.99	2.47	1.98	2.63	1.98
	Darkness/Lighted/On	3.69	8.48	15.22	11.25	9.45	9.87
	Darkness/Lighted/Off	0.94	1.16	0.53	0.67	0.74	0.92
	Darkness/Not Lighted	22.27	15.47	2.43	4.39	12.35	9.93
Vehicle Type	Passenger Car	94.58	93.75	96.51	96.97	95.54	95.36
	Single Unit Truck	0.57	0.86	0.35	0.52	0.46	0.69
	Combination Truck	1.89	3.34	1.13	1.38	1.51	2.36
	Bus	0.09	0.00	0.27	0.00	0.18	0.00
	School Bus	0.51	0.11	0.19	0.05	0.35	0.08
	Motorcycle	0.74	0.49	0.26	0.40	0.50	0.45
	Emergency Vehicle	0.28	0.49	0.24	0.18	0.26	0.33
Farm Equipment	0.29	0.11	0.09	0.04	0.19	0.08	

\*Excluding interstates and parkways

\*\*These percentages are representative from 2000 data only

TABLE 4.

**COMPARISON OF ALL INJURY AND FATAL CRASHES ON US31W WITH ALL INJURY AND FATAL CRASHES ON BOTH TWO LANE RURAL AND FOUR LANE URBAN HIGHWAYS (1998-2000)**

VARIABLE	CATEGORY	PERCENT OF TOTAL					
		TWO LANE RURAL		FOUR LANE URBAN		ALL	
		ALL	US 31W	ALL	US 31W	ROUTES*	US 31W
Severity	Fatal	3.01	3.20	0.89	1.51	1.95	2.35
	Injury	96.99	96.80	99.11	98.49	98.05	97.65
Directional Analysis	Intersection						
	Angle	8.22	21.10	31.09	20.96	19.66	21.03
	Rear End	3.86	6.09	14.41	9.70	9.13	7.90
	Opposing Left Turn	0.66	1.45	2.88	0.69	1.77	1.07
	Fixed Object	1.92	0.00	1.37	0.52	1.64	0.26
	Same Direction Sideswipe	0.19	0.00	0.59	0.85	0.39	0.42
	Bicycle	0.22	0.72	0.85	0.16	0.54	0.44
	Pedestrian	0.26	0.00	1.44	0.34	0.85	0.17
	All Intersection	17.69	31.55	53.95	34.23	35.82	32.89
	Non-Intersection						
	Rear End in Traffic Lane	9.93	19.83	20.48	28.14	15.20	23.99
	Shoulder (rear end/other)	0.90	2.17	0.11	0.00	0.51	1.09
	Head On	2.90	4.08	0.58	1.03	1.74	2.55
	Same Direction Sideswipe	0.90	1.59	1.85	3.00	1.38	2.29
	Opposite Direction Sideswipe	6.39	2.31	1.23	1.28	3.81	1.80
	Driveway Related	7.30	9.54	8.67	16.11	7.98	12.83
	Parked Vehicle	1.44	0.72	0.83	0.83	1.14	0.78
	Pedestrian	1.32	1.59	1.51	0.50	1.42	1.04
	Fixed Object	22.08	14.89	3.78	6.16	12.93	10.53
	Ran Off Roadway	20.97	2.47	1.13	2.85	11.05	2.66
	Overturned in Road	2.80	0.00	0.24	0.50	1.52	0.25
	Bicycle	0.46	1.75	0.45	0.66	0.45	1.20
	Animal	1.86	2.24	0.25	0.65	1.05	1.45
	Train	0.08	0.00	0.02	0.00	0.05	0.00
	Time of Day	Midnight - 5:59 am	9.92	6.60	5.15	4.31	7.54
6:00 am - 11:59 am		23.88	23.43	23.69	22.68	23.79	23.05
Noon - 5:59 pm		41.07	46.47	49.50	55.08	45.29	50.77
6:00 pm - 11:59 pm		25.11	23.51	21.66	17.93	23.39	20.72
Day of Week	Monday - Friday	71.35	72.42	77.57	74.08	74.46	73.25
	Saturday - Sunday	28.65	27.58	22.43	25.92	25.54	26.75
Month	December - February	21.79	20.01	22.56	23.20	22.18	21.61
	March - May	25.69	28.96	26.27	30.36	25.98	29.66
	June - August	25.93	28.81	24.98	25.80	25.45	27.31
	September - November	26.60	22.21	26.19	20.63	26.39	21.42
Number of Vehicles	One	52.16	23.89	9.58	12.32	30.87	18.10
	Two	43.06	67.54	74.09	70.77	58.58	69.16
	More than two	4.77	8.56	16.33	16.92	10.55	12.74
Land Use	Rural	76.00	48.34	5.83	14.24	40.92	31.29
	Business/Industrial	11.53	42.97	66.74	81.89	39.13	62.43
	Other	12.38	8.68	16.36	3.71	14.37	6.20
Road Surface Conditions	Dry	72.59	81.68	77.28	72.33	74.94	77.01
	Wet	23.04	17.52	21.12	25.00	22.08	21.26
	Snow/Ice/Slush	3.93	0.79	1.47	2.17	2.70	1.48

TABLE 4.

COMPARISON OF ALL INJURY AND FATAL CRASHES ON US31W WITH ALL INJURY AND FATAL CRASHES ON BOTH TWO LANE RURAL AND FOUR LANE URBAN HIGHWAYS (continued)

VARIABLE	CATEGORY	PERCENT OF TOTAL						
		TWO LANE RURAL		FOUR LANE URBAN		ALL		
		ALL	US 31W	ALL	US 31W	ROUTES*	US 31W	
Weather	Clear	61.32	68.18	60.11	58.21	60.71	63.19	
	Raining	14.45	15.94	14.38	15.96	14.41	15.95	
	Snowing	2.29	0.79	1.47	2.70	1.88	1.75	
	Fog/Smog/Smoke	1.56	0.72	0.27	0.17	0.91	0.45	
	Sleet/Hail	0.36	0.00	0.27	0.16	0.31	0.08	
	Cloudy	19.66	14.37	23.33	22.80	21.50	18.58	
Road Character	Straight/Level	38.48	73.66	73.30	62.92	55.89	68.29	
	Straight/Grade	14.36	18.20	17.87	30.03	16.11	24.11	
	Straight/Hillcrest	5.17	0.95	2.11	2.01	3.64	1.48	
	Curve/Level	19.81	2.47	3.20	2.84	11.50	2.66	
	Curve/Grade	18.16	3.92	2.97	1.86	10.56	2.89	
	Curve/Hillcrest	3.82	0.00	0.46	0.17	2.14	0.09	
Type Accident 1st Event	Collision with Non-Fixed Object							
	Other Vehicle	46.23	74.66	88.50	86.82	67.37	80.74	
	Pedestrian	1.46	1.59	2.64	0.85	2.05	1.22	
	Bicycle	0.53	2.47	1.14	0.48	0.83	1.47	
	Animal	1.54	2.31	0.22	0.17	0.88	1.24	
	Train	0.08	0.00	0.02	0.00	0.05	0.00	
	Deer	1.10	0.00	0.20	0.65	0.65	0.32	
	Collision with Fixed Object							
	Utility Pole	2.72	4.38	1.46	1.49	2.09	2.94	
	Guardrail	1.75	1.75	0.63	1.52	1.19	1.63	
	Crash Cushion	0.03	0.00	0.01	0.16	0.02	0.08	
	Sign Post	0.85	0.95	0.23	0.66	0.54	0.81	
	Tree	8.70	3.11	0.49	0.17	4.60	1.64	
	Building/Wall	0.37	0.00	0.14	0.00	0.26	0.00	
	Curbing	0.18	0.00	0.73	1.00	0.46	0.50	
	Fence	2.48	0.00	0.12	0.00	1.30	0.00	
	Bridge	0.68	0.72	0.15	0.00	0.41	0.36	
	Culvert/Headwall	2.13	1.45	0.17	1.02	1.15	1.23	
	Median Barrier	0.02	0.79	0.30	0.83	0.16	0.81	
	Snow embankment	0.06	0.00	0.01	0.00	0.03	0.00	
	Earth embankment/ Rock cut / Ditch	16.75	0.79	0.72	2.52	8.74	1.66	
	Fire Hydrant	0.07	0.00	0.10	0.00	0.09	0.00	
	Guardrail End Treatment	0.39	0.00	0.10	0.00	0.25	0.00	
	Other Fixed Objects	1.71	0.95	0.26	0.00	0.98	0.48	
	Non-Collision							
	Overturned	3.70	0.72	0.36	0.67	2.03	0.70	
	Fire/Explosion	0.03	0.00	0.00	0.00	0.02	0.00	
	Submersion	0.04	0.00	0.00	0.00	0.02	0.00	
	Ran off roadway	4.74	0.95	0.31	0.49	2.53	0.72	
	Other	1.00	0.95	0.28	0.32	0.64	0.63	
	Contributing Factors (Percent of all crashes)	Human						
		Unsafe Speed	17.11	7.57	4.45	2.87	10.78	5.22
Failure to Yield		11.25	23.26	26.39	22.74	18.82	23.00	
Following too Close		2.33	4.22	8.10	3.86	5.22	4.04	
Improper Passing		0.99	1.68	0.46	0.16	0.72	0.92	
Disregard Traffic Control		1.31	2.40	9.75	6.90	5.53	4.65	
Improper Turn		0.66	0.72	1.66	1.34	1.16	1.03	

TABLE 4.

**COMPARISON OF ALL INJURY AND FATAL CRASHES ON US31W WITH ALL INJURY AND FATAL CRASHES ON BOTH TWO LANE RURAL AND FOUR LANE URBAN HIGHWAYS (continued)**

VARIABLE	CATEGORY	PERCENT OF TOTAL					
		TWO LANE RURAL		FOUR LANE URBAN		ALL	
		ALL	US 31W	ALL	US 31W	ROUTES*	US 31W
Contributing Factors (Percent of all crashes)	Human (continued)						
	Alcohol Involvement	10.66	4.71	4.98	3.50	7.82	4.11
	Drug	1.68	0.95	0.42	0.68	1.05	0.81
	Sick	6.50	0.00	0.33	0.16	3.41	0.08
	Fell Asleep	1.90	4.58	1.01	1.82	1.46	3.20
	Lost Consciousness	0.73	0.72	0.51	0.34	0.62	0.53
	Driver Inattention	21.88	35.71	34.27	31.71	28.08	33.71
	Distraction	2.26	4.94	2.08	1.35	2.17	3.15
	Physical Disability	0.84	0.00	0.30	0.17	0.57	0.09
	Cell Phone**	0.13	0.00	0.23	0.00	0.18	0.00
	Improper Backing**	0.14	0.00	0.04	0.00	0.09	0.00
	Misjudged Clearance**	0.73	0.72	0.42	1.04	0.58	0.88
	Not Under Proper Control**	0.19	1.45	1.67	1.21	0.93	1.33
	Over-correcting**	0.15	0.72	0.24	0.35	0.19	0.54
	Vehicular						
	Defective Brakes	1.65	3.04	1.53	1.00	1.59	2.02
	Lighting Defective	0.37	2.47	0.13	0.16	0.25	1.31
	Steering Defective	0.58	0.79	0.08	0.17	0.33	0.48
	Tire Problem	1.35	0.00	0.31	0.67	0.83	0.34
	Defective Tow Hitch	0.07	0.00	0.02	0.00	0.05	0.00
	Load Problem	0.21	0.00	0.11	0.00	0.16	0.00
	Environmental						
	Animal Action	4.54	3.92	0.34	0.49	2.44	2.21
	Glare	1.09	0.00	1.03	0.16	1.06	0.08
	View Obstruction	4.65	0.00	3.14	3.52	3.89	1.76
	Debris in Roadway	0.74	0.79	0.17	0.35	0.46	0.57
	Improper Traffic Control	0.07	0.00	0.27	0.00	0.17	0.00
	Defective Shoulder	0.58	0.72	0.02	0.16	0.30	0.44
	Hole/Bump	0.28	0.00	0.05	0.00	0.16	0.00
	Road Construction	0.26	0.72	0.31	1.37	0.29	1.05
	Improperly Parked Vehicle	0.17	0.00	0.08	0.00	0.12	0.00
	Fixed Object	0.14	0.00	0.13	0.00	0.13	0.00
	Slippery Surface	15.36	9.77	8.59	13.01	11.97	11.39
	Water Pooling	1.53	0.00	0.70	1.00	1.12	0.50
Light Condition	Daylight	66.91	72.42	75.25	80.08	71.08	76.25
	Dawn	2.10	1.45	1.30	1.19	1.70	1.32
	Dusk	2.66	3.49	2.39	1.67	2.53	2.58
	Darkness/Lighted/On	2.84	8.61	17.36	11.57	10.10	10.09
	Darkness/Lighted/Off	0.90	2.63	0.55	0.33	0.73	1.48
	Darkness/Not Lighted	24.39	11.40	2.90	5.17	13.65	8.28
Vehicle Type	Passenger Car	93.70	94.35	96.15	96.02	94.92	95.18
	Single Unit Truck	0.49	1.81	0.23	0.82	0.36	1.31
	Combination Truck	1.55	2.11	0.92	1.05	1.23	1.58
	Bus	0.05	0.00	0.23	0.00	0.14	0.00
	School Bus	0.33	0.38	0.15	0.00	0.24	0.19
	Motorcycle	1.83	0.53	0.70	1.06	1.27	0.79
	Emergency Vehicle	0.22	0.45	0.25	0.16	0.24	0.31
	Farm Equipment	0.25	0.00	0.10	0.08	0.18	0.04

\*Excluding interstates and parkways

\*\*These percentages are representative from 2000 data only

**Table 5. SPOTS AND SECTIONS ON US 31W WITH A CRF OF 1.00 OR ABOVE**

Length	Funtional Classification	County	AADT	Number of Crashes	Milepoint Range		Ac	Aa	CRF
					Start	End			
1	R	47	3,016	32	3.599	4.599	492	969	1.97
0.1	R	47	3,350	26	4.099	4.199	3.74	7.09	1.90
0.3	R	47	2,784	26	4.099	4.399	3.65	8.53	2.33
0.3	R	47	3,069	13	9.346	9.646	3.49	3.87	1.11
0.3	U	47	10,500	50	14.806	15.106	2.48	4.35	1.75
0.1	U	47	10,500	29	14.988	15.088	2.11	2.52	1.19
1	U	47	15,895	146	15.904	16.904	353	839	2.38
0.3	U	47	17,274	45	16.309	16.609	2.12	2.38	1.12
0.1	U	47	14,000	44	16.539	16.639	1.82	2.87	1.57
0.3	U	47	17,006	63	16.614	16.914	2.13	3.38	1.59
0.1	U	47	19,100	35	16.899	16.999	1.57	1.67	1.07
0.3	U	47	21,293	54	16.942	17.242	2.00	2.32	1.16
1	U	47	26,443	184	16.942	17.942	330	635	1.93
0.1	U	47	17,567	46	17.299	17.399	1.63	2.39	1.47
0.3	U	47	28,139	82	17.299	17.599	1.86	2.66	1.43
1	U	47	17,725	140	17.973	18.973	347	721	2.08
0.3	U	47	30,420	82	18.598	18.898	1.82	2.46	1.35
0.1	U	47	36,055	58	18.783	18.883	1.18	1.47	1.24
1	U	47	40,265	491	19.002	20.002	315	1114	3.54
0.3	U	47	41,128	223	19.209	19.509	1.70	4.95	2.92
0.1	U	47	41,200	98	19.349	19.449	1.12	2.17	1.94
0.1	U	47	40,640	107	19.458	19.558	1.12	2.40	2.14
0.3	U	47	40,500	120	19.509	19.809	1.70	2.71	1.59
0.1	U	47	40,500	63	19.681	19.781	1.12	1.42	1.26
0.1	U	47	40,500	67	19.788	19.888	1.12	1.51	1.34
0.3	U	47	36,513	121	19.859	20.159	1.74	3.03	1.74
0.1	U	47	36,500	64	19.892	19.992	1.17	1.60	1.36
1	U	47	35,319	282	27.399	28.399	319	729	2.29
0.1	U	47	32,400	51	27.599	27.699	1.23	1.44	1.16
0.3	U	47	34,794	159	27.599	27.899	1.76	4.17	2.37
0.1	U	47	35,840	70	27.712	27.812	1.18	1.78	1.51
0.3	U	47	36,700	71	27.923	28.223	1.74	1.77	1.01

**APPENDIX A**

**Summary of Corridor Data by Highway District**



**TABLE A-1. DATA USED FOR SELECTION PROCESS IN DISTRICT 1**

Route	Total Counties*	Total Miles	Total Miles by Funtional Classification			
			Urban Arterial	Urban Local/Collector	Rural Arterial	Rural Local/Collector
US 45	4	53.3	12.2	0.0	19.5	21.5
US 51	4	40.7	0.0	0.0	40.7	0.0
US 60	4	89.0	11.5	0.0	77.5	0.0
US 68	3	58.9	0.4	0.0	58.5	0.0
KY 80	4	46.8	2.3	0.0	18.5	26.1
KY 94	5	78.9	2.4	0.0	34.3	42.3
KY 121	4	65.0	4.4	0.0	46.9	13.7
KY 307	3	28.0	0.0	0.0	0.0	28.0
US 641	4	51.0	4.0	0.0	47.0	0.0

**Crash Information (per year, 1998-2000)**

Route	Total Number of Crashes	Number of Fatalities	Number of Injuries	Number of Fatal/Injury Crashes	Fatal/Injury Crash Percentage	Crash Rate (C/100 MVM)
US 45	463	2.5	211	132.5	29	288
US 51	75	2	35.5	29.5	39	150
US 60	646.5	3	337	201.5	31	281
US 68	228	2	111.5	71	31	225
KY 80	93	2	42	29.5	32	268
KY 94	148	1.5	76.5	46.5	31	237
KY 121	210	1.5	104	68.5	33	220
KY 307	14.5	0	3.5	3	21	120
US 641	344.5	1.5	157	98.5	29	236

**Average Daily Traffic (ADT)**

**Total Miles**

Route	Weighted	Maximum	Minimum	Annual VMT** (100 Million)	Two Lanes or Fewer	Over Two Lanes
US 45	8,276	29,500	815	1.61	29.6	23.7
US 51	3,367	8,830	2,080	0.50	39.8	1.0
US 60	7,076	45,000	2,808	2.30	78.1	10.9
US 68	4,714	12,623	2,356	1.01	52.3	6.6
KY 80	2,028	12,900	388	0.35	46.8	0.0
KY 94	2,166	12,255	195	0.62	78.9	0.0
KY 121	4,014	14,878	1,380	0.95	65.0	0.0
KY 307	1,178	10,355	822	0.12	28.0	0.0
US 641	7,833	25,208	2,595	1.46	33.2	17.9

\*Number of counties route travels through (counties are only considered once if route re-enters county)

\*\*Vehicle Miles Traveled

**TABLE A-2. DATA USED FOR SELECTION PROCESS IN DISTRICT 2**

Route	Total Counties*	Total Miles	Total Miles by Funtional Classification			
			Urban Arterial	Urban Local/Collector	Rural Arterial	Rural Local/Collector
US 41	4	90.6	25.6	0.0	5.1	59.9
US 41A	4	66.7	18.4	0.0	48.3	0.0
KY 54	2	35.9	5.9	0.0	0.0	30.0
KY 56	4	61.5	0.1	0.0	13.0	48.4
US 60	4	100.9	17.5	0.0	83.3	0.0
KY 70	3	66.6	3.9	0.8	0.0	61.9
KY 91	2	38.7	5.3	0.0	0.0	33.4
KY 109	4	80.4	1.8	0.0	13.3	65.3
US 231	2	41.8	7.5	0.0	0.0	34.3
US 431	3	54.0	4.3	0.0	49.7	0.0

**Crash Information (per year, 1998-2000)**

Route	Total Number of Crashes	Number of Fatalities	Number of Injuries	Number of Fatal/Injury Crashes	Fatal/Injury Crash Percentage	Crash Rate (C/100 MVM)
US 41	944.5	4	391.5	244	26	331
US 41A	841	4.5	410.5	253	30	333
KY 54	147	0.5	62	40.5	28	207
KY 56	138	1.5	62	46	33	264
US 60	760	3.5	312.5	203.5	27	251
KY 70	264	1.5	96.5	65.5	25	396
KY 91	61	0.5	37	23	38	189
KY 109	129	2	60.5	46.5	36	198
US 231	277.5	1	125.5	73.5	26	246
US 431	608	4.5	253	155	25	441

**Average Daily Traffic (ADT)**

**Total Miles**

Route	Average Daily Traffic (ADT)			Annual VMT** (100 Million)	Total Miles	
	Weighted	Maximum	Minimum		Two Lanes or Fewer	Over Two Lanes
US 41	8,617	44,623	1,580	2.85	75.0	15.7
US 41A	10,385	31,300	2,950	2.53	46.9	19.8
KY 54	5,424	23,100	929	0.71	32.5	3.4
KY 56	2,326	5,760	1,520	0.52	61.5	0.0
US 60	8,210	29,776	1,730	3.02	76.6	24.3
KY 70	2,740	29,100	479	0.67	65.9	0.8
KY 91	2,290	9,500	1,321	0.32	38.7	0.0
KY 109	2,222	8,270	439	0.65	80.4	0.0
US 231	7,396	27,700	3,750	1.13	38.0	3.9
US 431	6,996	28,451	2504	1.38	48.5	5.5

\*Number of counties route travels through (counties are only considered once if route re-enters county)

\*\*Vehicle Miles Traveled

**TABLE A-3. DATA USED FOR SELECTION PROCESS IN DISTRICT 3**

Route	Total Counties*	Total Miles	Total Miles by Funtional Classification			
			Urban Arterial	Urban Local/Collector	Rural Arterial	Rural Local/Collector
US 31E	2	45.0	7.8	0.0	29.6	7.7
US 68	5	112.1	14.9	0.0	47.3	50.0
KY 70	4	75.4	0.0	0.0	2.7	72.8
US/KY 79	4	63.6	4.5	0.0	20.5	38.6
KY 90	2	33.7	2.9	0.0	30.9	0.0
KY 100	4	87.8	3.4	0.0	2.2	82.2
KY 101	3	30.3	0.0	0.0	9.1	21.2
US 231	3	55.5	8.3	0.0	17.2	30.0

**Crash Information (per year, 1998-2000)**

Route	Total Number of Crashes	Number of Fatalities	Number of Injuries	Number of Fatal/Injury Crashes	Fatal/Injury Crash Percentage	Crash Rate (C/100 MVM)
US 31E	251	2	147	89	35	246
US 68	597	4	295	187	31	249
KY 70	103	3.5	61	41	40	185
US/KY 79	132.5	5	66.5	43	32	227
KY 90	148.5	1.5	79.5	47	32	193
KY 100	208.5	3	120	77	37	322
KY 101	64.5	3	27	19	29	270
US 231	690	2	315	193.5	28	485

**Average Daily Traffic (ADT)**

**Total Miles**

Route	Average Daily Traffic (ADT)			Annual VMT** (100 Million)	Total Miles	
	Weighted	Maximum	Minimum		Two Lanes or Fewer	Over Two Lanes
US 31E	6,218	24,100	3,040	1.02	40.3	4.7
US 68	5,860	23,300	1,040	2.40	55.1	57.1
KY 70	2,026	12,218	658	0.56	75.1	0.3
US/KY 79	2,519	16,300	877	0.58	61.7	1.9
KY 90	6,234	14,600	1,610	0.77	24.4	9.4
KY 100	2,023	13,500	37	0.65	87.6	0.2
KY 101	2,157	6,120	838	0.24	30.3	0.0
US 231	7,018	37,959	964	1.42	48.6	6.9

\*Number of counties route travels through (counties are only considered once if route re-enters county)

\*\*Vehicle Miles Traveled

**TABLE A-4. DATA USED FOR SELECTION PROCESS IN DISTRICT 4**

Route	Total Counties*	Total Miles	Total Miles by Funtional Classification			
			Urban Arterial	Urban Local/Collector	Rural Arterial	Rural Local/Collector
US 31E	3	69.8	5.4	0.0	35.9	28.5
US 31W	4	65.1	20.1	0.0	6.9	38.1
KY 55	4	38.1	3.3	0.0	16.3	18.6
US 60	2	47.0	2.5	0.0	44.5	0.0
KY 61	4	45.5	1.0	0.0	42.2	2.2
US 62	3	99.1	12.8	0.0	0.6	85.8
KY 84	5	65.9	0.0	0.0	0.0	65.9
KY 88	3	56.3	0.0	0.0	0.0	56.3
US 150	2	28.6	1.9	0.0	26.6	0.0
KY 259	3	54.5	0.0	0.0	29.4	25.1

**Crash Information (per year, 1998-2000)**

Route	Total Number of Crashes	Number of Fatalities	Number of Injuries	Number of Fatal/Injury Crashes	Fatal/Injury Crash Percentage	Crash Rate (C/100 MVM)
US 31E	333.5	5	148	95.5	29	273
US 31W	942	4.5	419	261.5	28	327
KY 55	134	1	59.5	38	28	211
US 60	146.5	3	94.5	54.5	37	169
KY 61	128	1.5	61	40	31	160
US 62	425.5	4.5	229	137	32	241
KY 84	57.5	1.5	31	20.5	36	231
KY 88	58	1.5	31.5	24	41	194
US 150	132	0.5	60	35.5	27	221
KY 259	70	0.5	62	35.5	51	173

**Average Daily Traffic (ADT)**

**Total Miles**

Route	Average Daily Traffic (ADT)			Annual VMT** (100 Million)	Total Miles	
	Weighted	Maximum	Minimum		Two Lanes or Fewer	Over Two Lanes
US 31E	4,800	22,228	1,478	1.223	68.947	0.867
US 31W	12,127	39,034	1,700	2.882	39.192	25.921
KY 55	4,576	12,179	809	0.636	36.963	1.143
US 60	5,057	10,501	1,440	0.867	45.459	1.506
KY 61	4,808	12,503	1,588	0.798	30.84	14.634
US 62	4,883	25,500	725	1.766	88.926	10.171
KY 84	1,036	4,243	145	0.249	65.876	0
KY 88	1,456	2,469	798	0.299	56.252	0
US 150	5,715	16,000	2,302	0.596	28.574	0
KY 259	2,035	18,500	174	0.405	53.785	0.704

\*Number of counties route travels through (counties are only considered once if route re-enters county)

\*\*Vehicle Miles Traveled

**TABLE A-5. DATA USED FOR SELECTION PROCESS IN DISTRICT 5**

Route	Total Counties*	Total Miles	Total Miles by Funtional Classification			
			Urban Arterial	Urban Local/Collector	Rural Arterial	Rural Local/Collector
KY 22	3	43.6	10.3	0.0	0.1	33.2
US 31E	3	26.9	19.7	0.0	7.2	0.0
US 31W	1	25.5	21.2	0.0	4.3	0.0
US 42	4	47.8	12.6	0.2	6.2	28.8
KY 44	4	56.3	2.9	0.0	0.7	52.7
KY 55	4	39.8	2.3	0.0	18.5	19.0
US 60	3	56.1	29.1	0.0	27.0	0.0
KY 61	2	37.8	19.9	0.4	2.9	14.5
US 421	4	63.0	3.8	0.0	57.6	1.6

**Crash Information (per year, 1998-2000)**

Route	Total Number of Crashes	Number of Fatalities	Number of Injuries	Number of Fatal/Injury Crashes	Fatal/Injury Crash Percentage	Crash Rate (C/100 MVM)
KY 22	257.5	1.5	126	80.5	31	310
US 31E	1162.5	3	372	264.5	23	588
US 31W	1245	6	597	389	31	500
US 42	394	1.5	141.5	99	25	289
KY 44	360.5	2	177.5	118.5	33	360
KY 55	142.5	4	72	47.5	33	185
US 60	1418	4	482	319.5	23	442
KY 61	946	1	404	261	28	551
US 421	207	1.5	81.5	60.5	29	233

**Average Daily Traffic (ADT)**

**Total Miles**

Route	Average Daily Traffic (ADT)			Annual VMT** (100 Million)	Total Miles	
	Weighted	Maximum	Minimum		Two Lanes or Fewer	Over Two Lanes
KY 22	5,232	22,400	1,081	0.83	43.1	0.5
US 31E	20,112	46,300	5,270	1.98	12.3	14.6
US 31W	26,733	68,300	397	2.49	3.4	22.1
US 42	7,823	64,487	1,277	1.36	35.3	12.5
KY 44	4,874	24,000	639	1.00	50.6	5.7
KY 55	5,303	20,300	431	0.77	38.1	1.7
US 60	15,672	87,800	4,690	3.21	34.2	21.9
KY 61	12,455	39,703	2,960	1.72	26.7	11.0
US 421	3,864	28,102	764	0.89	61.4	1.6

\*Number of counties route travels through (counties are only considered once if route re-enters county)

\*\*Vehicle Miles Traveled

**TABLE A-6. DATA USED FOR SELECTION PROCESS IN DISTRICT 6**

Route	Total Counties*	Total Miles	Total Miles by Funtional Classification			
			Urban Arterial	Urban Local/Collector	Rural Arterial	Rural Local/Collector
KY 8	5	69.2	11.4	12.8	0.0	45.0
KY 9	3	47.1	15.2	0.0	32.0	0.0
KY 10	3	46.1	1.8	2.5	0.0	41.8
KY 16	3	30.9	13.6	0.0	0.0	17.3
KY 17	2	36.4	16.6	0.0	0.0	19.7
KY 22	4	57.6	0.0	0.0	0.0	57.6
US 25	3	48.6	14.5	0.0	0.0	34.0
US 27	3	62.4	20.1	0.0	42.3	0.0
KY 36	4	75.5	0.3	0.0	0.0	75.2
US 42	3	48.9	6.9	0.0	0.0	41.9
US 62	2	37.7	0.9	0.0	0.0	36.8
US 127	2	36.2	0.0	0.0	24.7	11.5
KY 177	2	30.0	8.5	0.0	0.0	21.4

**Crash Information (per year, 1998-2000)**

Route	Total Number of Crashes	Number of Fatalities	Number Injuries	Fatal/Injury Crashes	Crash Percentage	Crash Rate (C/100 MVM)
KY 8	443.5	1.5	162.5	109	25	587
KY 9	193	2	95	61.5	32	108
KY 10	104.5	0	44.5	31.5	30	547
KY 16	263.5	0.5	128.5	86	33	377
KY 17	550.5	2.5	245	158	29	556
KY 22	179	1	64	47	26	512
US 25	1027.5	2	421	277	27	600
US 27	931	3	331	217	23	468
KY 36	122.5	1	56	40.5	33	294
US 42	507	3	233	146	29	409
US 62	70.5	0	30	22.5	32	216
US 127	71	3	48	30	43	217
KY 177	76	1	37	25	33	353

**Average Daily Traffic**

**Total Miles**

Route	Average Daily Traffic			Annual VMT** (100 Million)	Total Miles	
	Weighted	Maximum	Minimum		Two Lanes or Fewer	Over Two Lanes
KY 8	2,990	25,471	254	0.76	67.1	2.1
KY 9	10,340	26,700	3,047	1.78	28.9	18.2
KY 10	1,137	4,270	390	0.19	46.1	0.0
KY 16	6,193	27,500	838	0.70	28.8	2.1
KY 17	7,455	31,441	719	0.99	30.6	5.8
KY 22	1,660	15,100	580	0.35	57.3	0.4
US 25	9,669	30,545	1010	1.71	39.3	9.2
US 27	8,733	39,800	2480	1.99	48.0	14.4
KY 36	1,513	12,300	235	0.42	74.9	0.6
US 42	6,953	36,627	2314	1.24	45.7	3.2
US 62	2,373	6,520	584	0.33	37.7	0.0
US 127	2,451	7,980	1310	0.32	36.2	0.0
KY 177	1,968	3,320	544	0.22	30.0	0.0

\*Number of counties route travels through (counties are only considered once if route re-enters county)

\*\*Vehicle Miles Traveled

**TABLE A-7. DATA USED FOR SELECTION PROCESS IN DISTRICT 7**

Route	Total Counties*	Total Miles	Total Miles by Funtional Classification			
			Urban Arterial	Urban Local/Collector	Rural Arterial	Rural Local/Collector
KY 4	1	19.3	19.3	0.0	0.0	0.0
US 25	3	76.8	34.2	0.0	7.9	34.6
US 27	4	63.2	24.6	0.0	38.6	0.0
KY 33	4	27.7	3.5	0.0	0.0	24.2
KY 34	2	20.6	4.9	0.0	4.4	11.2
US 60	4	62.0	32.3	0.0	10.3	19.3
US 68	5	59.0	12.7	0.0	31.0	15.2
US 127	3	39.3	8.9	3.2	24.0	3.1
KY 169	3	36.0	6.8	0.0	0.0	29.2
US 460	3	59.5	6.8	0.0	52.7	0.0
KY 627	3	30.4	3.9	0.0	26.5	0.0

**Crash Information (per year, 1998-2000)**

Route	Total Number of Crashes	Number of Fatalities	Number of Injuries	Number of Fatal/Injury Crashes	Fatal/Injury Crash Percentage	Crash Rate (C/100 MVM)
KY 4	966.5	5	341	235	24	240
US 25	1466.5	5.5	589	389	27	525
US 27	1819.5	3.5	714.5	463.5	25	423
KY 33	85.5	0.5	46.5	31.5	37	287
KY 34	103.5	3	51	31.5	30	263
US 60	1042	7	416	274.5	26	301
US 68	835.5	3	390.5	252	30	499
US 127	543.5	3	240.5	157	29	316
KY 169	134	2	59	41	31	391
US 460	347.5	5.5	158	112	32	346
KY 627	151.5	0	74.5	52	34	219

**Average Daily Traffic (ADT)**

**Total Miles**

Route	Weighted	Maximum	Minimum	Annual VMT** (100 Million)	Two Lanes or Fewer	Over Two Lanes
KY 4	57,271	74,987	38,500	4.03	0.0	19.3
US 25	9,968	45,600	367	2.79	60.9	15.9
US 27	18,634	71,500	4,865	4.30	34.0	29.2
KY 33	2,942	11,700	455	0.30	27.8	0.0
KY 34	5,228	16,300	776	0.39	18.6	2.0
US 60	15,289	46,800	805	3.46	36.4	25.6
US 68	7,769	46,400	657	1.67	53.7	5.3
US 127	11,983	24,400	3,199	1.72	10.8	28.5
KY 169	2,611	7,670	330	0.34	36.0	0.0
US 460	4,624	14,300	1477	1.00	59.1	0.4
KY 627	6,246	16,900	998	0.69	28.5	1.8

\*Number of counties route travels through (counties are only considered once if route re-enters county)

\*\*Vehicle Miles Traveled

**TABLE A-8. DATA USED FOR SELECTION PROCESS IN DISTRICT 8**

Route	Total Counties*	Total Miles	Total Miles by Funtional Classification			
			Urban Arterial	Urban Local/Collector	Rural Arterial	Rural Local/Collector
US 27	3	74.9	7.9	0.0	67.0	0.0
KY 55	2	27.3	0.0	0.0	9.0	18.2
KY 61	2	50.7	0.0	0.0	22.5	28.1
KY 70	4	58.3	0.0	0.0	0.0	58.3
KY 78	2	22.2	0.0	0.0	0.0	22.2
KY 80	4	77.9	4.2	0.0	18.8	54.9
KY 90	5	76.6	5.1	0.0	71.5	0.0
US 127	4	82.8	0.0	0.0	82.8	0.0
KY 461	2	17.8	0.0	0.0	17.8	0.0

**Crash Information (per year, 1998-2000)**

Route	Total Number of Crashes	Number of Fatalities	Number of Injuries	Number of Fatal/Injury Crashes	Fatal/Injury Crash Percentage	Crash Rate (C/100 MVM)
US 27	667	8	324.5	191.5	29	239
KY 55	106	2	37	25	24	275
KY 61	63	2.5	37.5	24.5	39	148
KY 70	73.5	1.5	46.5	30	41	199
KY 78	21.5	1	13.5	9.5	44	182
KY 80	309	3.5	144	84	27	214
KY 90	200	8	116.5	67	34	151
US 127	203	3.5	111	64.5	32	127
KY 461	36	1	18	11.5	32	86

**Average Daily Traffic (ADT)**

**Total Miles**

Route	Average Daily Traffic (ADT)			Annual VMT** (100 Million)	Total Miles	
	Weighted	Maximum	Minimum		Two Lanes or Fewer	Over Two Lanes
US 27	10,200	36,800	2,847	2.79	65.0	10.0
KY 55	3,876	26,800	915	0.39	27.3	0.0
KY 61	2,300	11,740	904	0.43	50.7	0.0
KY 70	1,733	8,400	577	0.37	58.3	0.0
KY 78	1,459	2,375	835	0.12	22.2	0.0
KY 80	5,080	14,200	1,207	1.44	71.6	6.4
KY 90	4,751	10,360	1,080	1.33	76.6	0.0
US 127	5,271	14,629	1,208	1.59	81.7	1.1
KY 461	6,394	11,477	5,390	0.42	17.8	0.0

\*Number of counties route travels through (counties are only considered once if route re-enters county)

\*\*Vehicle Miles Traveled

**TABLE A-9. DATA USED FOR SELECTION PROCESS IN DISTRICT 9**

Route	Total Counties*	Total Miles	Total Miles by Funtional Classification			
			Urban Arterial	Urban Local/Collector	Rural Arterial	Rural Local/Collector
KY 1	2	33.9	0.0	0.0	1.3	32.6
KY 7	3	60.3	0.0	0.0	29.7	30.6
KY 8	5	53.6	5.3	0.0	12.1	36.2
KY 9	3	69.0	4.9	0.0	64.1	0.0
KY 10	3	45.9	2.4	0.0	25.9	17.6
KY 11	3	41.1	2.8	0.0	38.3	0.0
US 23	2	49.8	18.7	0.0	31.1	0.0
KY 32	4	86.0	3.9	0.0	22.9	59.2
KY 36	2	36.6	0.0	0.0	0.0	36.6
KY 57	3	47.6	0.0	0.0	0.0	47.6
US 60	4	85.7	14.1	0.0	0.0	71.5

**Crash Information (per year, 1998-2000)**

Route	Total Number of Crashes	Number of Fatalities	Number of Injuries	Number of Fatal/Injury Crashes	Fatal/Injury Crash Percentage	Crash Rate (C/100 MVM)
KY 1	112.5	1	54.5	36.5	32	260
KY 7	123	1	57.5	38	31	266
KY 8	153	3	70.5	45	29	360
KY 9	139.5	9	96	48.5	35	95
KY 10	107.5	1.5	47.5	36	33	248
KY 11	100.5	2	48	32	32	175
US 23	484	0	254	153.5	32	186
KY 32	329.5	1.5	163	102	31	298
KY 36	81	0	30	20	25	267
KY 57	36	0	23.5	14	39	223
US 60	754	0	384.5	227	30	361

**Average Daily Traffic (ADT)**

**Total Miles**

Route	Weighted	Maximum	Minimum	Annual VMT** (100 Million)	Two Lanes or Fewer	Over Two Lanes
KY 1	3,504	22,700	1,715	0.43	32.8	1.1
KY 7	2,097	6,865	465	0.46	59.8	0.6
KY 8	2,170	7,480	81	0.42	52.4	1.2
KY 9	5,834	14,161	1,559	1.47	64.5	4.5
KY 10	2,587	10,900	620	0.43	45.9	0.0
KY 11	3,828	7,140	1,388	0.57	40.1	1.0
US 23	14,284	31,569	7,580	2.60	0.0	49.8
KY 32	3,519	25,600	570	1.10	83.3	2.7
KY 36	2,276	9,290	862	0.30	36.6	0.0
KY 57	929	3,920	173	0.16	47.6	0.0
US 60	6,682	28,900	1195	2.09	78.6	7.0

\*Number of counties route travels through (counties are only considered once if route re-enters county)

\*\*Vehicle Miles Traveled

**TABLE A-10. DATA USED FOR SELECTION PROCESS IN DISTRICT 10**

Route	Total Counties*	Total Miles	Total Miles by Funtional Classification			
			Urban Arterial	Urban Local/Collector	Rural Arterial	Rural Local/Collector
KY 7	3	50.3	0.0	0.0	11.7	38.7
KY 11	4	62.5	0.0	0.0	26.7	35.8
KY 15	4	80.3	6.4	0.0	55.8	18.1
KY 30	3	68.2	0.0	0.0	11.2	57.0
KY 52	3	55.2	0.0	0.0	0.0	55.2
US 460	3	68.8	0.0	0.0	68.8	0.0

**Crash Information (per year, 1998-2000)**

Route	Total Number of Crashes	Number of Fatalities	Number of Injuries	Number of Fatal/Injury Crashes	Fatal/Injury Crash Percentage	Crash Rate (C/100 MVM)
KY 7	96	1.5	75	46.5	48	222
KY 11	107.5	1.5	60	40.5	38	154
KY 15	502.5	9	410.5	222	44	230
KY 30	77.5	1	65	38.5	50	253
KY 52	174	2	98	58	33	295
US 460	197	3.5	146	93.5	47	215

**Average Daily Traffic (ADT)**

**Total Miles**

Route	Weighted	Maximum	Minimum	Annual VMT** (100 Million)	Two Lanes or Fewer	Over Two Lanes
KY 7	2,358	6,770	991	0.43	50.3	0.0
KY 11	3,061	11,900	1,137	0.70	62.5	0.0
KY 15	7,467	31,900	454	2.19	71.5	8.7
KY 30	1,229	7,810	367	0.31	68.2	0.0
KY 52	2,922	18,300	358	0.59	55.1	0.1
US 460	3,656	14,000	1,422	0.92	68.8	0.0

\*Number of counties route travels through (counties are only considered once if route re-enters county)

\*\*Vehicle Miles Traveled

**TABLE A-11. DATA USED FOR SELECTION PROCESS IN DISTRICT 11**

Route	Total Counties*	Total Miles	Total Miles by Funtional Classification			
			Urban Arterial	Urban Local/Collector	Rural Arterial	Rural Local/Collector
KY 11	3	51.9	0.0	0.0	0.0	51.9
US 25E	3	47.1	5.9	0.0	41.2	0.0
KY 30	2	30.7	0.0	0.0	29.3	1.4
KY 66	3	54.4	0.0	0.0	0.0	54.4
KY 80	3	42.0	3.4	0.0	10.0	28.5
KY 92	2	44.6	2.1	0.0	0.0	42.4
US 119	2	54.9	0.0	0.0	54.9	0.0
KY 221	3	41.3	0.0	0.0	0.0	41.3
US 421	4	125.5	0.0	0.0	95.8	29.7

**Crash Information (per year, 1998-2000)**

Route	Total Number of Crashes	Number of Fatalities	Number of Injuries	Number of Fatal/Injury Crashes	Fatal/Injury Crash Percentage	Crash Rate (C/100 MVM)
KY 11	92	2	68.5	44	48	221
US 25E	362	3.5	228.5	125.5	35	120
KY 30	77.5	1.5	65.5	37	48	279
KY 66	30	0.5	24.5	15.5	52	120
KY 80	191	2	122	70	37	245
KY 92	87	3	52	32	37	247
US 119	119.5	4.5	65.5	43.5	36	98
KY 221	35	0.5	29.5	20	57	120
US 421	539	6.5	366.5	224	42	257

**Average Daily Traffic (ADT)**

**Total Miles**

Route	Weighted	Maximum	Minimum	Annual VMT** (100 Million)	Two Lanes or Fewer	Over Two Lanes
KY 11	2,201	11,100	1,068	0.42	51.9	0.0
US 25E	17,606	30,500	10,166	3.03	0.1	46.9
KY 30	2,482	3,422	619	0.28	30.7	0.0
KY 66	1,264	10,300	476	0.25	54.4	0.0
KY 80	5,089	21,600	2,911	0.78	34.8	7.2
KY 92	2,169	17,032	1,650	0.35	44.6	0.0
US 119	6,055	11,652	2,986	1.21	51.8	3.2
KY 221	1,933	3,443	573	0.29	41.3	0.0
US 421	4,585	28,378	1,405	2.10	120.5	5.0

\*Number of counties route travels through (counties are only considered once if route re-enters county)

\*\*Vehicle Miles Traveled

**TABLE A-12. DATA USED FOR SELECTION PROCESS IN DISTRICT 12**

Route	Total Counties*	Total Miles	Total Miles by Funtional Classification			
			Urban Arterial	Urban Local/Collector	Rural Arterial	Rural Local/Collector
KY 3	4	65.0	0.0	0.0	19.2	45.8
KY 7	3	56.4	0.0	0.0	0.7	55.7
US 23	5	108.0	6.1	0.0	101.9	0.0
KY 80	3	41.5	0.0	0.0	34.5	6.9
US 119	2	57.3	0.0	0.0	57.3	0.0
KY 122	2	50.5	0.0	0.0	0.0	50.5
KY 194	2	85.0	0.0	0.0	0.0	85.0
KY 201	2	28.5	0.0	0.0	0.0	28.5

**Crash Information (per year, 1998-2000)**

Route	Total Number of Crashes	Number of Fatalities	Number of Injuries	Number of Fatal/Injury Crashes	Fatal/Injury Crash Percentage	Crash Rate (C/100 MVM)
KY 3	91	1	63	38.5	42	123
KY 7	95.5	2	79	51.5	54	185
US 23	565	14	378.5	231.5	41	105
KY 80	116	5.5	86.5	53.5	46	91
US 119	334.5	3	228.5	140	42	217
KY 122	164.5	2	162.5	96	58	303
KY 194	162	3.5	113.5	77	48	305
KY 201	34	0	23	15.5	46	288

**Average Daily Traffic (ADT)**

**Total Miles**

Route	Average Daily Traffic (ADT)			Annual VMT** (100 Million)	Total Miles	
	Weighted	Maximum	Minimum		Two Lanes or Fewer	Over Two Lanes
KY 3	3,122	14,139	1,144	0.74	48.1	16.9
KY 7	2,513	9,030	1,097	0.52	56.1	0.3
US 23	13,672	32,095	5,662	5.39	0.0	108.0
KY 80	8,432	13,647	1,330	1.28	6.9	34.5
US 119	7,367	16,758	1,620	1.54	41.3	16.0
KY 122	2,942	3,911	980	0.54	50.5	0.0
KY 194	1,713	4,479	777	0.53	85.0	0.0
KY 201	1,134	2,029	537	0.12	28.5	0.0

\*Number of counties route travels through (counties are only considered once if route re-enters county)

\*\*Vehicle Miles Traveled

**APPENDIX B**

**Ranking of Routes by District**



**TABLE B-1. TOP THREE ROUTES FOR ALL NINE RANKING METHODS**

*District 1*

Ranking Method	Route Ranking				
	1	2	3	Recommendations	Score
1	US 60	US 45	US 641	1 US 60	82.6
2	US 60	US 45	US 641	2 KY 94	69.3
3	US 60	US 45	US 641	3 US 641	63.9
4	US 60	US 45	US 641		
5	US 60	US 45	US 641		
6	US 60	KY 94	KY 121		
7	US 60	US 45	KY 94		
8	US 60	US 45	US 641		
9	US 60	US 45	US 641		
				<u>Current Route</u>	
				US 60	

*District 2*

Ranking Method	Route Ranking				
	1	2	3	Recommendations	Score
1	US 41A	US 60	US 41	1 US 41A	73.2
2	US 41A	US 41	US 60	2 US 60	71.8
3	US 41A	US 41	US 60	3 US 41	71.7
4	US 41A	US 60	US 41		
5	US 41A	US 41	US 431		
6	US 60	US 41A	US 41		
7	US 41	US 41A	US 60		
8	US 41A	US 41	US 60		
9	US 41A	US 41	US 60		
				<u>Current Route</u>	
				US 60	

*District 3*

Ranking Method	Route Ranking				
	1	2	3	Recommendations	Score
1	US231	US 68	KY 100	1 US 68	73.2
2	US231	US 68	KY 100	2 US 231	69.9
3	US 68	US 231	US 31E	3 KY 100	55.2
4	US 68	US 231	US 31E		
5	US 231	US 68	KY 100		
6	US 68	US/KY 79*	KY 100		
7	US 68	US 231	KY 100		
8	US 231	US 68	KY 100		
9	US 231	US 68	KY 100		
				<u>Current Route</u>	
				US 31W	

\*Combined and considered as one route

**TABLE B-1. TOP THREE ROUTES FOR ALL NINE RANKING METHODS (continued)**

*District 4*

Ranking Method	Route Ranking				
	1	2	3	Recommendations	Score
1	US 31W	US 31E	US 62	1 US 31W	72.5
2	US 31W	US 62	US 31E	2 US 31E	56.5
3	US 31W	US 62	US 31E	3 US 62	56.3
4	US 31W	US 31E	US 62		
5	US 31W	US 62	US 31E		
6	US 31E	KY 61	US 31W		
7	US 31W	US 62	US 31E		
8	US 31W	US 62	US 31E		
9	US 31W	US 62	US 31E		
				<u>Current Route</u>	
				US 31W	

*District 5*

Ranking Method	Route Ranking				
	1	2	3	Recommendations	Score
1	US 60	US 31E	US 31W	1 US 60	71.6
2	US 60	US 31E	US 31W	2 US 31E	66.3
3	US 60	US 31E	US 31W	3 US 31W	64.4
4	US 60	US 31E	US 31W		
5	US 31W	US 31E	KY 61		
6	US 421	US 60	US42		
7	US 60	US 31E	KY 61		
8	US 60	US 31E	US 31W		
9	US 31W	US 60	US 31E		
				<u>Current Route</u>	
				US 31W	

*District 6*

Ranking Method	Route Ranking				
	1	2	3	Recommendations	Score
1	US 25	US 27	KY 8	1 US 25	68.6
2	US 25	US 27	KY 8	2 KY 8	68.6
3	US 25	US 27	KY 8	3 US 27	61.8
4	US 27	US 25	KY 8		
5	US 25	US 27	KY 17		
6	US 27	KY 8	KY 9		
7	US 25	US 27	KY 8		
8	US 25	US 27	KY 8		
9	US 25	US 27	KY 8		
				<u>Current Route</u>	
				US 25	

**TABLE B-1. TOP THREE ROUTES FOR ALL NINE RANKING METHODS (continued)**

*District 7*

Ranking Method	Route Ranking			Recommendations		Score
	1	2	3	1	US 27	
1	US 27	US 25	US 68	2	US 25	69.5
2	US 27	US 25	US 68	3	US 68	66.9
3	US 27	US 25	US 68			
4	US 27	US 68	US 25			
5	US 25	US 27	US 68			
6	US 27	US 68	US 25			
7	US 25	US 27	US 68			
8	US 27	US 25	US 68			
9	US 25	US 27	US 68			
				<u>Current Route</u>		
				US 27		

*District 8*

Ranking Method	Route Ranking			Recommendations		Score
	1	2	3	1	US 27	
1	US 27	KY 90	KY 80	2	KY 90	61.2
2	US 27	KY 80	KY 90	3	KY 80	59.1
3	US 27	KY 90	KY 80			
4	US 27	KY 90	US 127			
5	US 27	KY 80	KY 55			
6	KY 90	US 127	US 27			
7	US 27	KY 90	KY 80			
8	US 27	KY 80	KY 90			
9	US 27	KY 80	KY 90			
				<u>Current Route</u>		
				US 27		

*District 9*

Ranking Method	Route Ranking			Recommendations		Score
	1	2	3	1	US 60	
1	US 60	KY 32	KY 8	2	KY 32	62.7
2	US 60	KY 32	JY 23	3	KY 8	58.1
3	US 60	KY 23	KY32			
4	US 60	KY 23	KY 32			
5	US 60	KY 32	KY 8			
6	KY 9	KY 32	US 60			
7	US 60	KY 32	KY 8			
8	US 60	KY 32	KY 8			
9	US 60	KY 32	KY 23			
				<u>Current Route</u>		
				US 60		

**TABLE B-1. TOP THREE ROUTES FOR ALL NINE RANKING METHODS (continued)**

*District 10*

Ranking Method	Route Ranking				
	1	2	3	Recommendations	Score
1	KY 15	US 460	KY 30	1 KY 15	82.8
2	KY 15	US 460	KY 52	2 US 460	66.9
3	KY 15	US 460	KY 52	3 KY 30	58.3
4	KY 15	US 460	KY 11		
5	KY 15	KY 52	US 460		
6	KY 15	US 460	KY 11		
7	KY 15	US 460	KY 30		
8	KY 15	US 460	KY 30		
9	KY 15	US 460	KY 30		
				<u>Current Route</u>	
				KY 15	

*District 11*

Ranking Method	Route Ranking				
	1	2	3	Recommendations	Score
1	US 421	KY 30	US 25E	1 US 421	78.4
2	US 421	US 25 E	KY 80	2 US 25E	52.6
3	US 421	US 25 E	KY 80	3 KY 80	49.8
4	US 421	US 25E	KY 80		
5	US 421	KY 30	KY 80		
6	US 421	US 25E	US 119		
7	US 421	KY 30	KY 11		
8	US 421	KY 30	KY 80		
9	US 421	KY 30	KY 80		
				<u>Current Route</u>	
				US 421	

*District 12*

Ranking Method	Route Ranking				
	1	2	3	Recommendations	Score
1	US 23	KY 122	KY 194	1 US 23	71.3
2	US 23	US 119	KY 194	2 US 119	54.3
3	US 23	US 119	KY 122	3 KY 122	53.8
4	US 23	US 119	KY 122		
5	KY 122	KY 194	US 119		
6	US 23	KY 3	US 119		
7	US 23	KY 122	KY 194		
8	US 23	KY 122	KY 194		
9	US 23	KY 122	KY 194		
				<u>Current Route</u>	
				US 23	

## **APPENDIX C**

### **Lists of Spots and Sections with Critical Number of Crashes (Case Study District)**



**TABLE C-1. ALL SPOTS AND SECTIONS WITH CRITICAL NUMBER OF CRASHES  
(CASE STUDY DISTRICT-US 31W)**

Length	County	AADT	Number of Crashes	Milepoint Range		Ac	Aa	CRF
				Start	End			
1	47	40,265	491	19.002	20.002	315	1114	3.54
0.3	47	41,128	223	19.209	19.509	1.70	4.95	2.92
1	47	15,895	146	15.904	16.904	353	839	2.38
0.3	47	34,794	159	27.599	27.899	1.76	4.17	2.37
0.3	47	2,784	26	4.099	4.399	3.65	8.53	2.33
1	47	35,319	282	27.399	28.399	319	729	2.29
0.1	47	40,640	107	19.458	19.558	1.12	2.40	2.14
1	47	17,725	140	17.973	18.973	347	721	2.08
1	47	3,016	32	3.599	4.599	492	969	1.97
0.1	47	41,200	98	19.349	19.449	1.12	2.17	1.94
1	47	26,443	184	16.942	17.942	330	635	1.93
0.1	47	3,350	26	4.099	4.199	3.74	7.09	1.90
0.3	47	10,500	50	14.806	15.106	2.48	4.35	1.75
0.3	47	36,513	121	19.859	20.159	1.74	3.03	1.74
0.3	47	40,500	120	19.509	19.809	1.70	2.71	1.59
0.3	47	17,006	63	16.614	16.914	2.13	3.38	1.59
0.1	47	14,000	44	16.539	16.639	1.82	2.87	1.57
0.1	47	35,840	70	27.712	27.812	1.18	1.78	1.51
0.1	47	17,567	46	17.299	17.399	1.63	2.39	1.47
0.3	47	28,139	82	17.299	17.599	1.86	2.66	1.43
0.1	47	36,500	64	19.892	19.992	1.17	1.60	1.36
0.3	47	30,420	82	18.598	18.898	1.82	2.46	1.35
0.1	47	40,500	67	19.788	19.888	1.12	1.51	1.34
0.1	47	40,500	63	19.681	19.781	1.12	1.42	1.26
0.1	47	36,055	58	18.783	18.883	1.18	1.47	1.24
0.1	47	10,500	29	14.988	15.088	2.11	2.52	1.19
0.1	47	32,400	51	27.599	27.699	1.23	1.44	1.16
0.3	47	21,293	54	16.942	17.242	2.00	2.32	1.16
0.3	47	17,274	45	16.309	16.609	2.12	2.38	1.12
0.3	47	3,069	13	9.346	9.646	3.49	3.87	1.11
0.1	47	19,100	35	16.899	16.999	1.57	1.67	1.07
0.3	47	36,700	71	27.923	28.223	1.74	1.77	1.01
0.1	82	23,200	35	2.199	2.299	1.43	1.38	0.96
0.3	47	24,000	47	24.404	24.704	1.94	1.79	0.92
1	47	3,042	15	8.799	9.799	491	450	0.92
0.3	47	25,700	48	20.956	21.256	1.90	1.71	0.90
0.1	47	25,700	34	21.099	21.199	1.37	1.21	0.88
0.3	82	23,200	43	2.199	2.499	1.95	1.69	0.87
0.1	47	26,756	34	23.899	23.999	1.34	1.16	0.86
0.1	47	25,700	33	24.307	24.407	1.37	1.17	0.86
0.1	47	36,700	40	27.831	27.931	1.17	1.00	0.85
0.3	47	27,796	46	25.904	26.204	1.86	1.51	0.81
0.1	47	15,786	24	16.649	16.749	1.72	1.39	0.81
0.3	47	28,791	47	17.667	17.967	1.85	1.49	0.81
1	47	2,759	11	7.499	8.499	504	364	0.72

**TABLE C-1. ALL SPOTS AND SECTIONS WITH CRITICAL NUMBER OF CRASHES  
(CASE STUDY DISTRICT-US 31W) (continued)**

Length	County	AADT	Number of Crashes	Milepoint Range		Ac	Aa	CRF
				Start	End			
0.3	47	41,200	55	18.907	19.207	1.70	1.22	0.72
0.3	47	27,152	40	23.799	24.099	1.88	1.35	0.72
1	47	2,530	10	4.691	5.691	516	361	0.70
0.1	47	10,500	16	14.806	14.906	2.11	1.39	0.66
0.3	47	3,350	8	2.776	3.076	3.36	2.18	0.65
0.1	47	28,867	26	17.399	17.499	1.30	0.82	0.63
0.1	47	25,700	24	21.655	21.755	1.37	0.85	0.62
0.1	47	13,500	17	15.458	15.558	1.86	1.15	0.62
0.1	47	41,200	31	19.119	19.219	1.12	0.69	0.62
0.1	47	36,700	28	27.948	28.048	1.17	0.70	0.59
0.1	47	24,900	22	17.973	18.073	1.39	0.81	0.58
1	47	7,600	19	13.499	14.499	400	228	0.57
0.3	50	7,351	11	12.035	12.335	2.41	1.37	0.57
0.3	47	2,530	6	4.599	4.899	3.82	2.17	0.57
1	50	8,219	20	1.102	2.102	394	222	0.56
1	47	3,871	11	10.499	11.499	462	260	0.56
0.1	47	29,490	23	17.799	17.899	1.29	0.71	0.55
0.1	47	36,500	25	20.007	20.107	1.17	0.63	0.53
0.3	47	38,156	38	28.266	28.566	1.73	0.91	0.53
0.1	47	3,139	7	9.499	9.599	3.90	2.04	0.52
1	47	4,863	12	12.405	13.405	439	225	0.51
0.1	47	26,500	20	18.549	18.649	1.35	0.69	0.51
0.3	50	5,149	8	2.667	2.967	2.78	1.42	0.51
1	50	6,560	15	2.2	3.2	412	209	0.51
0.1	47	18,100	16	16.4	16.5	1.61	0.81	0.50
0.1	47	32,905	22	28.899	28.999	1.23	0.61	0.50
0.1	47	28,599	20	26.011	26.111	1.30	0.64	0.49
0.3	47	3,350	6	0.291	0.591	3.36	1.64	0.49
1	50	8,144	17	10.577	11.577	395	191	0.48
0.1	47	36,700	22	28.266	28.366	1.17	0.55	0.47
0.1	47	36,700	22	28.064	28.164	1.17	0.55	0.47
0.1	47	21,195	16	17.035	17.135	1.49	0.69	0.46
0.1	47	35,814	21	17.675	17.775	1.18	0.54	0.45
1	50	5,237	11	12.035	13.035	431	192	0.44
0.1	47	24,000	16	25.904	26.004	1.41	0.61	0.43
0.1	47	32,632	19	27.399	27.499	1.23	0.53	0.43
0.3	47	4,380	6	12.405	12.705	2.98	1.25	0.42
0.3	47	7,600	8	13.999	14.299	2.38	0.96	0.40
0.3	50	6,160	7	0.9	1.2	2.59	1.04	0.40
0.1	47	2,530	5	4.599	4.699	4.50	1.80	0.40
0.1	47	4,380	6	12.405	12.505	3.15	1.25	0.40
0.1	47	41,200	19	19.009	19.109	1.12	0.42	0.38
0.3	50	5,330	6	7.9	8.2	2.74	1.03	0.37
0.1	50	5,090	6	2.667	2.767	2.87	1.08	0.37
0.3	50	8,830	8	1.8	2.1	2.25	0.83	0.37

**TABLE C-1. ALL SPOTS AND SECTIONS WITH CRITICAL NUMBER OF CRASHES  
(CASE STUDY DISTRICT-US 31W) (continued)**

Length	County	AADT	Number of Crashes	Milepoint Range		Ac	Aa	CRF
				Start	End			
0.1	47	32,290	16	26.25	26.35	1.24	0.45	0.37
0.1	47	3,350	5	2.899	2.999	3.74	1.36	0.36
0.1	47	36,700	17	28.166	28.266	1.17	0.42	0.36
0.1	47	41,450	18	27.166	27.266	1.11	0.40	0.36
1	50	8,604	13	9.541	10.541	391	138	0.35
0.3	47	7,600	7	14.444	14.744	2.38	0.84	0.35
0.3	50	8,058	7	1.3	1.6	2.33	0.79	0.34
0.3	47	5,121	5	13.024	13.324	2.79	0.89	0.32
0.1	47	7,600	6	14.444	14.544	2.26	0.72	0.32
0.3	50	8,963	7	10.349	10.649	2.24	0.71	0.32
0.1	47	41,200	16	19.22	19.32	1.12	0.35	0.32
0.1	50	5,330	5	7.9	8	2.79	0.86	0.31
0.1	50	9,540	6	10.577	10.677	1.99	0.57	0.29
0.3	50	10,820	7	11.23	11.53	2.09	0.59	0.28
0.1	47	7,600	5	13.999	14.099	2.26	0.60	0.27
0.1	47	4,380	4	11.399	11.499	3.15	0.83	0.26
0.1	50	4,440	4	12.149	12.249	3.13	0.82	0.26
0.1	50	12,100	6	12.035	12.135	1.75	0.45	0.26
0.1	47	2,530	3	7.499	7.599	4.50	1.08	0.24
0.3	50	8,540	5	9.945	10.245	2.28	0.53	0.23
0.3	50	8,540	5	9.541	9.841	2.28	0.53	0.23
0.1	50	10,500	5	11.23	11.33	1.89	0.43	0.23
0.1	47	2,976	3	7.99	8.09	4.04	0.92	0.23
0.1	47	2,980	3	9.346	9.446	4.04	0.92	0.23
0.1	47	3,210	3	10.499	10.599	3.84	0.85	0.22
0.1	47	3,350	3	3.599	3.699	3.74	0.82	0.22
0.1	47	3,350	3	0.472	0.572	3.74	0.82	0.22
0.1	47	3,350	3	0.199	0.299	3.74	0.82	0.22
0.1	50	8,540	4	9.945	10.045	2.12	0.43	0.20
0.1	50	8,540	4	9.541	9.641	2.12	0.43	0.20
0.1	50	8,830	4	1.8	1.9	2.08	0.41	0.20
0.1	47	10,210	4	14.797	14.897	1.92	0.36	0.19
0.1	50	6,160	3	1.3	1.4	2.56	0.44	0.17
0.1	50	6,160	3	1.102	1.202	2.56	0.44	0.17
0.1	50	8,830	3	2	2.1	2.08	0.31	0.15
0.1	50	9,510	3	1.43	1.53	1.99	0.29	0.14